



FRIDAY, JUNE 22.

Wm. Sellers & Co.'s Exhibit at the Chicago Exposition.

The exhibit of machine tools which has been contributed by this firm to the Chicago Exposition is one of the largest there. Of the quality of their work little need be said, as its reputation is too well known. The list of tools exhibited embraces the following: A 30-in. lathe 14 ft. 5 in. long; a 60-in. and a 42-in. horizontal boring mill; 45-in. vertical drill; 54-in. radial drill; 50-in. boring mill for 42-in. wheels; 1,500-lbs. steam hammer; 12-in. screw cutting lathe; drill grinding machine; 48-in. slotting machine,

they claim in a recent publication) have entirely redesigned this important group of tools.

Wm. Sellers & Co. have for years been enthusiastic advocates of the flat-top lathe bed, and for a long time they were the only American builders who had discarded the popular "V-shear." They claim for the flat shear a number of advantages, and hold that by its use they are enabled to obtain a greater capacity of swing over the slide rest than is possible with the V-shear.

Finding, however, that there was some difficulty in insuring a correct alignment of the centres, owing to the want of some better way of guiding the poppet head than by a tongue in the open space between the two flat faces of the shear top, it seems that early in their experience they introduced a V on the under side of one of the inner edges of the flat top, and this V, which is clearly shown in Fig. 2, is utilized in clamping the poppet head to hold it up to one of the inner straight-edges, which it does securely, and yet it permits absolute freedom of motion when the head is loosened.

Most flat-top shears heretofore made have had their out

satisfaction that in the case of the flat-top shear, the wear from long use occurs on the flat upper surface to a much greater extent than on the guiding edges of the bed against which the gibs press, this to such an extent as to warrant them in saying that the wear on the edges is practically of little moment, and is not perceptible after years of use. By making the edges of the shear vertical, the pressure to produce wear is diminished, and any wear of the upper flat surface does not loosen the slide rest sideways, so that the error in the truth of the turned work, due to the wear of the flat-top surface of the shear, is confined to the almost imperceptible effect of the slight difference in the vertical height of the tool while under cut, and is not complicated with any side movement of the cutting tool. A very considerable wear on the flat surface must occur before its influence can be felt on the work; while on the other hand, when the guiding edges are made inclined, a very slight wear of the top surface produces an immediate effect on the truth of the work, as detrimental as if the guiding surfaces had worn out of truth. The substitution of the vertical guiding surfaces for the

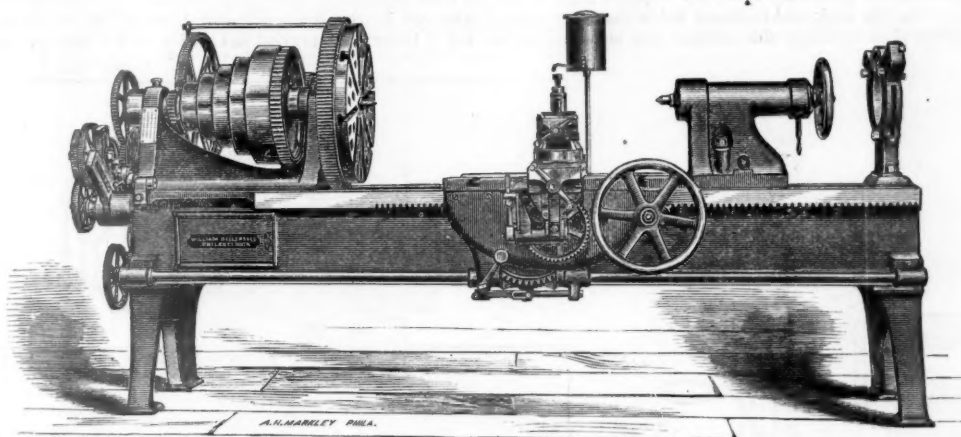


Fig. 1.

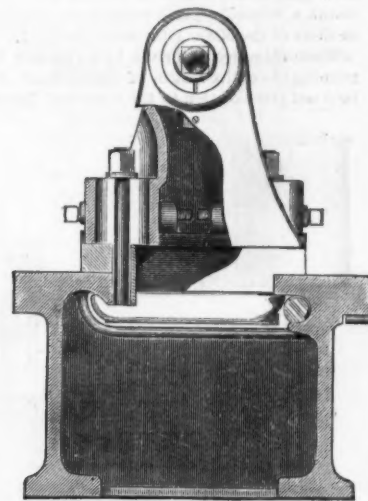


Fig. 2.

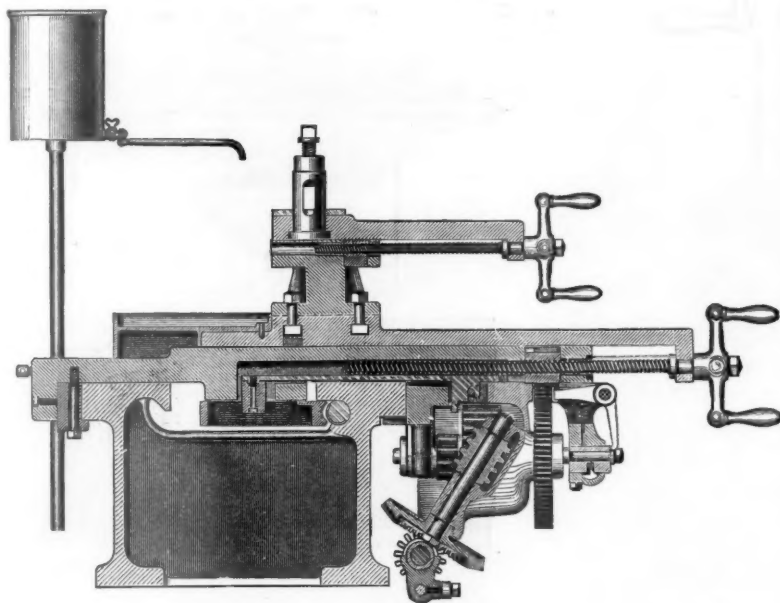


Fig. 3.

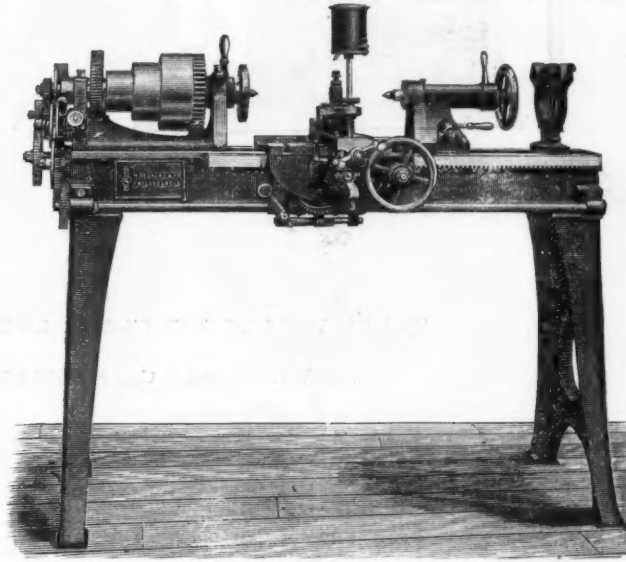


Fig. 4.

MACHINE TOOLS AT THE CHICAGO EXPOSITION.

From WM. SELLERS & CO., Philadelphia.

which takes in a piece 48 in. diameter and has a 12-in. stroke; and a 7-ft. double-head wheel lathe, which swings 90 in. The latter machine was built for the New York, West Shore & Buffalo Railway.

The following detailed description of these tools will interest many of our readers:

As the lathe is the oldest of machine tools, so it still remains the most important, and in examining such a collection as that displayed by Messrs. Wm. Sellers & Co. one naturally turns first to the lathes to see what changes have been recently made. Of the two self-acting slide lathes exhibited by this firm one is a 30-in. lathe, triple geared and with automatic longitudinal and cross feeds; the other a 12-in. double geared lathe with the longitudinal feed only automatic. Both of these tools are arranged for screw cutting, and in both the mechanism used for this purpose is entirely independent of the turning feeds. In other words, for turning, boring and drilling, the slide rest does not derive its movement from the lead screw, but is actuated by a separate feed rod driven by an independent feed motion.

The 30-in. lathe, fig. 1, appears upon casual inspection to possess all the familiar features of the well-known Sellers type of lathe, but a closer examination reveals a large number of changes in detail, which show that the makers (as

side guiding edges beveled at an angle inclining inward from the face of the shear, these angular edges being made to receive the holding-down shoes or gibs of the slide rest. In the lathes exhibited, the edges of the flat top are made vertical, not beveled, and this in combination with the inside V above mentioned is claimed as a very important improvement. When the edges are beveled, the wearing down of the top surface of the shear not only loosens the fit of the slide rest at the worn part (even if there is no wear on the guiding edges), but permits the movement of the slide rest sideways to the extent of this looseness, thus producing a greater disturbance of the tool line than is due to the mere change of position vertically at the circumference of the work being turned. It also necessitates the entire readjustment of all the surfaces as soon as the lathe shows deviation from truth in turning, no matter whether the wear be on the horizontal surface or on the edges of the bed; wear on either part producing the same effect on the work done in the lathe. By making the guiding edges of the top of the shear at right angles to the horizontal plane of the shear top, that is to say, by making them vertical and not inclined, the components of the adjustment are separated, and each is caused to be independent of the other. The makers claim that it has been demonstrated to their entire

usual inclined surfaces is therefore as important to the correct working of the lathe and to its durability as was the introduction of the under V to the holding of the movable head in adjustment to the live spindle.

Messrs. Wm. Sellers & Co. themselves argue that: "In view of the well-known fact that durability of machinery is largely dependent upon extended surface, where surfaces move or slide one on another, it is rather surprising that the flat-top shear should have met with so little favor in this country up to quite a recent period. Theoretically, it presents the largest wearing surface, and is the most easily made.

"The saddle of the slide rest, bearing over its whole under surface, may find a support up to the edges of the centre shear. Having less distance to span unsupported than on the V shear, the saddle can be made thinner and yet of sufficient strength, thus increasing the capacity of the lathe swing over the slide rest. On lathes with V guides there are usually four of these guides, the two outer ones serving as guides for the saddle, and the saddle must, of necessity, span the entire space unsupported from one V to the other; hence it must be thicker and heavier than if resting on a plane surface. The nominal capacity of any lathe is what it will swing over the shear. The actual capacity in relation

to cylindrical work is what it will swing over the slide rest; hence the advantage of less thickness in the saddle, if of sufficient strength." * * * * *

"The flat top shear can be readily planed true on its upper face, on its outer edges and on its inner edges. The outer edges guide the saddle, lost motions being taken up by shoes or gills. The lathe heads are guided by the inner edges. The parallelism of all these edges can be readily insured."

Most of our readers are probably familiar with the lathes as made by Wm. Sellers & Co., and know that their lathe-heads are made on section as if two I-beams were united at intervals by cross-girts which extend up close to the top of the bed, and the lead-screw, which is used for screw cutting only, and not for turning, is supported over its entire length by means of a trough in which it rests, as is shown in fig. 2. By being thus supported and not permitted to sag between distant points of support, it is claimed that a much truer thread can be cut than if the screw is carried by the nut and the end bearings only.

Quite radical changes have been made in the slide-rest of these lathes, both as regards construction and operation. In all lathes of all capacities these makers arrange the turning feed quite independent of the screw-cutting feed. Fig. 3 shows a vertical section through the slide-rest and the bed or shear of the 30-in. lathe shown in fig. 1.

The turning feed is driven by a rotating feed rod or shaft running the entire length of and in front of the bed. This feed rod gives motion to the slide rest by means of a rack

ing nut. This part is made self-adjusting, and is part of the movement of setting the required feed, so that all complication of movements to arrange for the feed required is done away with. Stress is laid on this part of the machine, for, apart from the saving in diminished friction, due to the dispensing with the worm and wheel, the great saving in time alone effected by the exceedingly simple and certain system of movements requisite to control the various motions essential in a self-acting slide rest, is an important consideration, as every motion in the new system is instantaneous. They have also added a very efficient device to prevent the screw feed and the turning feed being thrown into gear at the same time.

The feed rod on these lathes is driven by the well-known friction feed discs, and these, it is said, have been improved both in their range and in the method of clamping to position, so as to permit quick and easy adjustment. They also indicate at the point of adjustment the approximate feed obtainable at any fixed position of the movable discs. This is quite important, as it enables the workman to set the feed coarse or fine with certainty without any trial.

Fig. 4 shows the 12-in. lathe exhibited and fig. 5 gives the section through the bed that will explain the feed motion of lathes of this size.

The lathe of 30 in. swing has two sides to the rest, the upper one being swiveled to set any required angle in boring or the like work, and the stand below the upper rest is graduated to facilitate this setting. The slides are all so

concentric clamping of the sliding spindle at both ends of the bearing in which it slides. They arrange a lever convenient to the wheel, which works the screw in the spindle; a simple motion of this lever clamps the spindle concentrically at both ends of its bearing, and with a uniform pressure at each end. The concentric clamping device at the nose of the poppet head bearing, which has been in use for some time, while being an improvement over the old clamping set screw, does not hold the spindle with sufficient rigidity, inasmuch as it leaves it free to move out of line to the extent of any looseness in its bearing back of the clamping device. By clamping at front and back of the bearing they obtain great rigidity of alignment, and yet permit freedom of motion when the spindle is loosened. They also thereby render the spindles of the poppet heads interchangeable, thus adding another item to the list of interchangeable parts to the system. The live heads of these lathes, shown in sectional elevation in fig. 8 and in plan fig. 9, are on the plan long used by these makers, and can be briefly described in essential particulars. The spindles are said to be made of cast-steel especially forged for the purpose. They do not collar the front end of the spindle, but make the journal of good diameter and length, taking care to have it truly cylindrical, and support it over its entire length in a truly cylindrical bearing of carefully prepared bronze. The back bearing is also cylindrical, carried in a solid bearing of bronze. To prevent end motion of the spindle, they

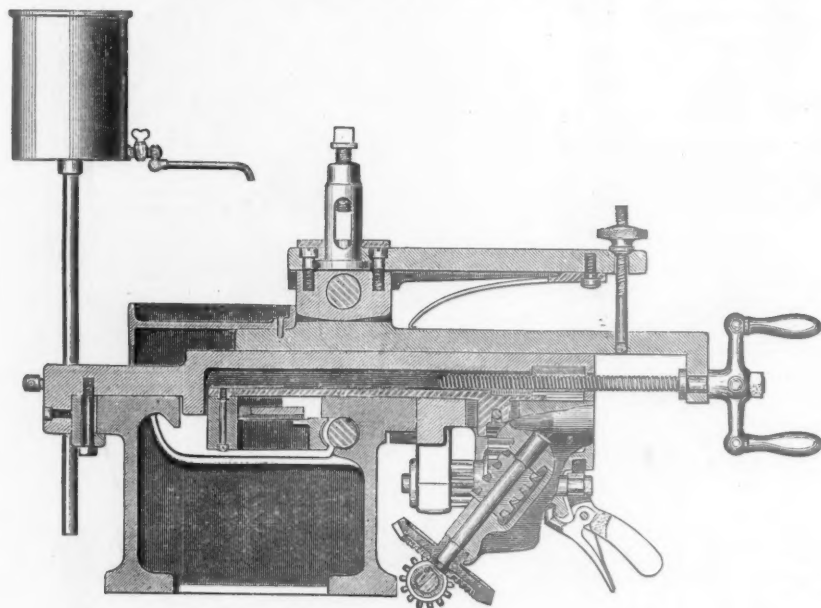


Fig. 5.

MACHINE TOOLS AT THE CHICAGO EXPOSITION.

From WM. SELLERS & Co., Philadelphia.

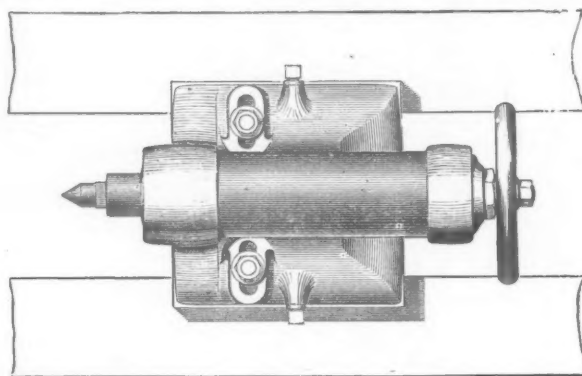


Fig. 6.

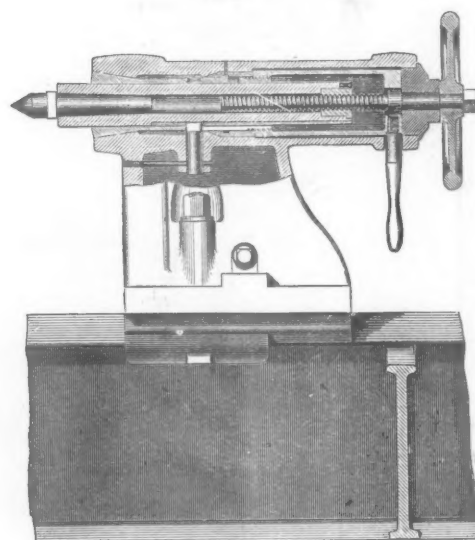


Fig. 7.

and gearing, the rack being on the under side of the overhanging edge of the top of the shear on its front side, while the gearing is carried by the apron dependent from the front side of the slide rest. In place of the shifting right and left hand worms on the feed rod, gearing into one worm wheel, to operate both directions of feed, as usually employed in American lathes, there is introduced a novel motion, obtained from bevel wheels on the feed rod, and carried through a system of gears, one of which is a spiral pinion motion, to the pinions which work the feeds; either to that one which operates the longitudinal feed and gears into the rack, or to the pinion on the screw of the cross slide to operate the cross feed. A counter-weighted lever near to the lower edge of the apron of the slide rest can be tumbled over by a slight touch, carrying with it the clutch, which gives motion in the required direction, and the motion of this lever is such as to coincide with the direction of the feed; thus, if the lever be thrown over to the right the lathe will feed in that direction, and if to the left it feeds to the left. In lathes provided with a cross feed in addition to the regular feed, a lever, limited in its motion by a shifting stop, controls the starting and the stopping of the feed in use. The position of this stop determines which of the feeds is to be used.

The cross feed is obtained by turning a revolving nut in the lower slide rest, and this revolving nut when not in use for an automatic cross feed must be locked to place, and so made a stationary nut. One of the marked improvements reference to this locking and unlocking of this revol-

arranged as to entirely cover the bearing surfaces upon which they slide, so as to effectually exclude the dirt from all these surfaces. The 12-in. lathe has an adjustable device for setting the point of the tool high or low after it is clamped to position. This is a very important feature and greatly increases the efficiency of the lathe, inasmuch as such lathes are used on work of small diameter, and the smaller the piece being turned the more care must be exercised in setting the tool as to height of the cutting point. As these smaller lathes have no cross feed worked automatically, a lever and latch are arranged in a convenient position below the cross slide to stop and start the feed. The aim being to arrange all the operating levers of the slide rests in such position as to be very convenient to the workmen, and to be so readily operated as to consume neither time nor attention.

In regard to the movable or poppet head (see figs. 6 and 7) of the lathes, we have already mentioned its insured alignment by means of the V on the under side of one of the inner edges of the flat top of the shear. When the head is loosened for adjustment back and forth on the bed it is free to move, but the moment an attempt is made to tighten it to place this under V, acted on by the clamping-down shoe, draws the head over to one side of the centre opening in the shear and holds it firmly against this surface, which surface is subjected to no wear whatever. The practical utility of this important feature of our lathes has been demonstrated through many years of constant use. The more recent improvements in the poppet head relate to the

secure to the spindle back of the back-bearing a carefully made ring or collar of hardened steel. This collar is confined between a hardened steel thrust collar back of it and the back end of the back-bearing in front of it, and all these parts are inclosed in a tight cast-iron tail block, which serves as an oil-well to insure constant and perfect lubrication. The surfaces which confine the revolving collar front and back of it are so adjusted as to allow perfect freedom of rotary motion, but no perceptible end motion. The securing of the spindle endways is confined to the thickness of one collar only, and this is inclosed in so large a mass of cast iron as likely to insure a uniform temperature in all its parts, thus diminishing the liability to stick or jam, while the expansion of the spindle endways from this collar, if there is any expansion in excess of the head, is allowed for in freedom of end motion in the front journal, which is a little longer than the front journal which runs in it. In turning work between centres the thrust is taken against the thrust collar back of the fixed collar on the spindle, while in turning chucked work the spindle is held in place endways by the confinement of the one fixed collar on the spindle between the fixed back-thrust and the back end of the back-bearing. With this arrangement of the spindle, the change from one kind of turning to another requires no thought to be given to any adjustment of the spindle, to be ready for the changed condition of pressure, as is the case with lathes of ordinary construction. When the spindle of a lathe has collars at its front end, and is provided with an adjustable tail screw to take up the

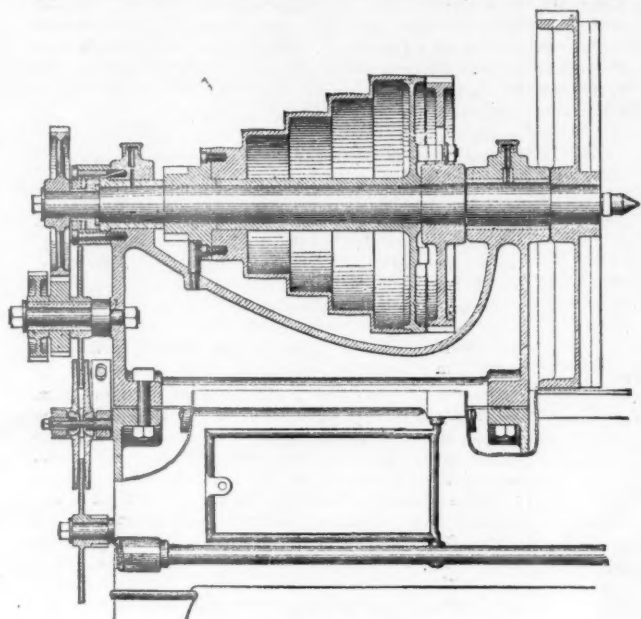


Fig. 8.

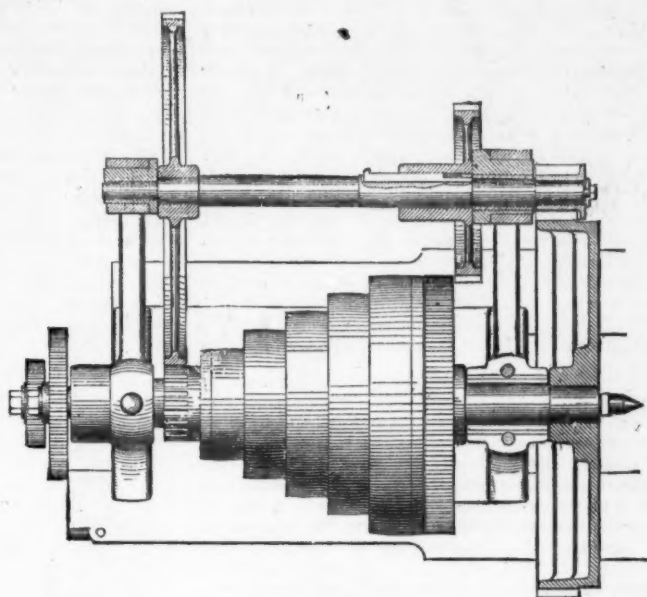


Fig. 9.

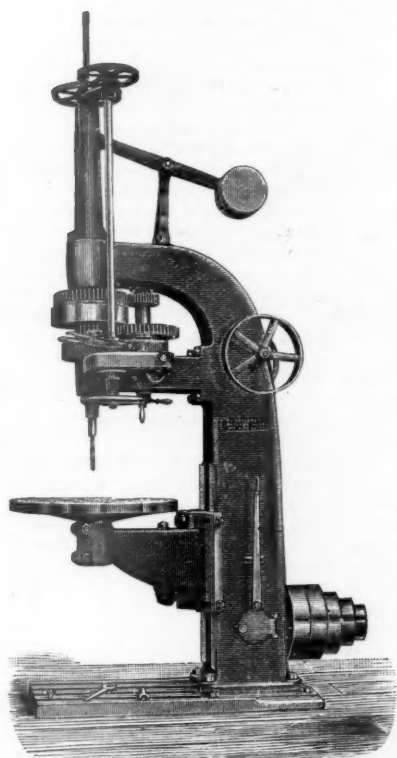


Fig. 10.

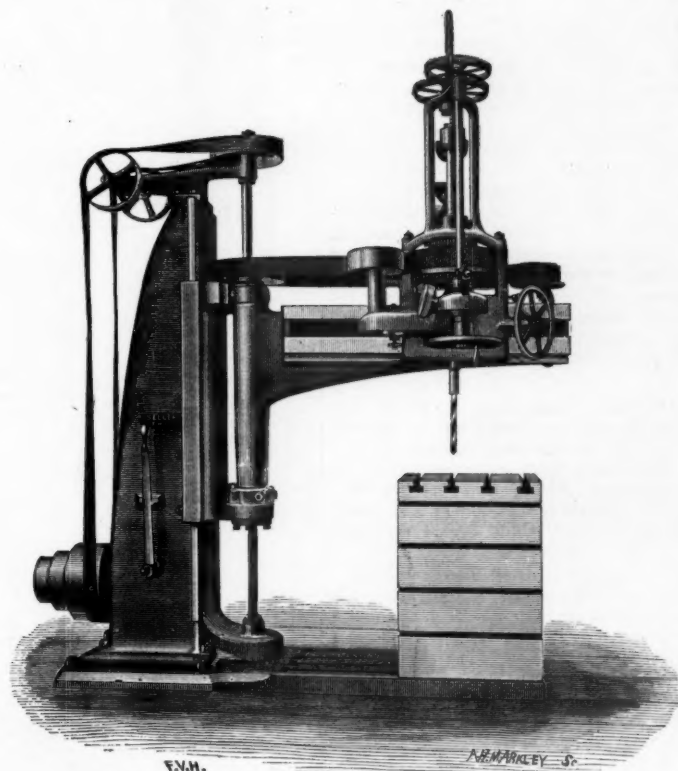


Fig. 11.

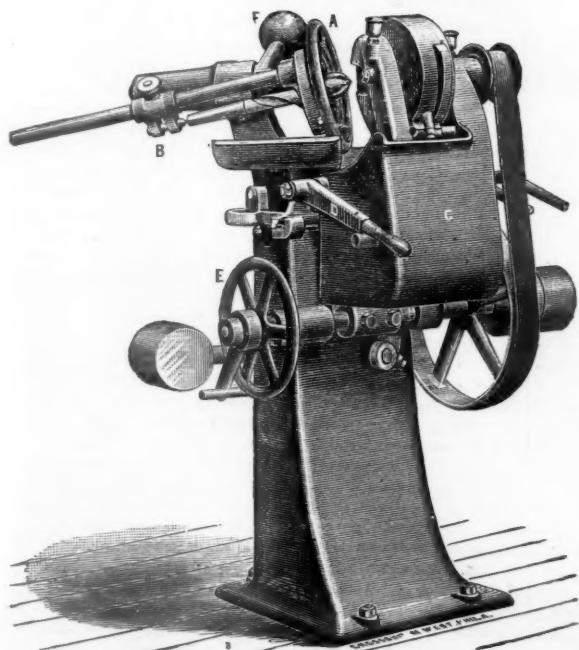


Fig. 13.

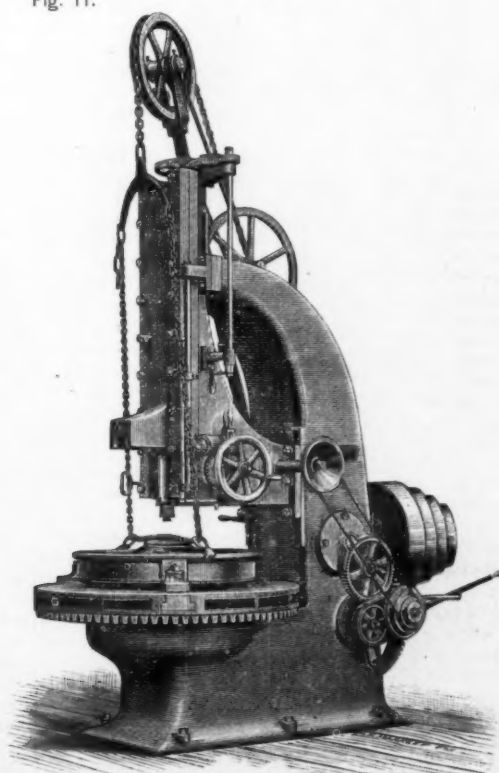


Fig. 12.

MACHINE TOOLS AT THE CHICAGO EXPOSITION.

From WM. SELLERS & Co., Philadelphia.

back-thrust, constant attention is required in the adjustment of these parts, and any neglect or error in the adjustment is soon shown in the worn condition of the collars, and it is seldom that any lathe, even in the hands of the most careful workman, long escapes this worn condition. A spindle held at one end by a collar and at the other end by a tail screw, set up to take up lost motion, may heat, and a very slight amount of expansion over that of the head itself will serve to produce an injurious amount of end binding, as is seen in the worn condition of such collars on lathes of the old style.

This form of back-thrust does away entirely with the tail screw, and in its place presents a large and very durable wearing surface. It also permits the extension of the spindle through the tail block to receive change wheels of any size for screw-cutting or for feed. The form of the live head is such as to hold the front-bearing rigid against the side strains, and the back-bearing against the strain of the spindle pressed endways.

DRILLING MACHINES.

Messrs. William Sellers & Co. exhibit also three drilling machines as types of their vertical, radial and horizontal drill presses. These are all belt driven presses, as distinguished from those that have spur or bevel wheels between the cone pulley and the spindle, which gear wheels transmit all the power even when the work is light. Their horizontal drill (not illustrated) has the spindle horizontal after the manner of the spindle of the ordinary turning lathe. This form of drill press is doubtless the natural outgrowth of the lathe, used as a drilling machine. For small holes the spindle is belt-driven, and for larger ones it is driven through the back-gear system precisely as is the case with back-gear lathes. It has always been conceded that for comfortable and smooth action in drilling small holes the lathe stands alone in furnishing the proper requisites, and the horizontal drill is nothing more nor less than a lathe adapted to drilling purposes. The desirability of accomplishing the same result when the spindle is vertical and not horizontal, long ago led Messrs. William Sellers & Co., as well as the makers of the special drilling machines used in making firearms, etc., to treat their vertical spindles in precisely the same manner as their horizontal spindles, in all drilling machines where such treatment is possible. William Sellers & Co. say that as compared to drill presses geared in the ordinary manner (all other matters of strength and convenience being the same), they have clearly established the fact that there is at least 12 per cent. gain in amount of work done, or in the diminished cost of work done on the belted machines.

To apply the belt system to an ordinary vertical drill, where the spindle always holds the same position as regards its supports, is a much more simple matter than the application of the same principle to a radial drill, where the spindle swings about as well as moves to and from the stationary centre post. Fig. 10 shows the construction of Wm. Sellers & Co.'s belt-driven vertical drill, and in fig. 11 represents their radial drill, also belt driven, entirely from the cone to the spindle. Our reason for treating all these tools in common in our description is that we are by so doing enabled to draw attention to the features common to all of them, the more clearly to point out the advantages claimed. The drill press was almost the last machine tool, if not the last, to which a self-acting feed was applied. Even now it is claimed by many that hand-fed drills are to be preferred, for some yet unexplained reason. The nicety of feed required, especially when small drills are being used, certainly seems to point to the need of some good method of feeding the drill down that shall not be dependent on the skill of the workman, and that can be so graded as to fully meet the requirements of amount of feed. The early attempts at self-acting feeds looked toward accomplishing the result by frictional devices which should slip to the required capacity of the drill. These feeds did not work well, because slip under friction is a rather uncertain function, liable to sudden and dangerous changes.

The invention of Messrs. Wm. Sellers & Co.'s improved friction feed has certainly presented a good solution to the problem of positive feed on the drill press. Its friction is the friction of a fast running belt, i. e., the transmission of motion depends on the bite of surfaces, and so long as the duty asked of the frictional surface is within their power they, like the driving wheels of the locomotive, perform their work in as positive a manner as if the surfaces were locked together by teeth. This form of feed is applied to the drill presses under consideration as it has been to every one of the machines made by Messrs. Wm. Sellers & Co. to which a steady feed, continuous but variable in amount, can be applied. To those readers who are not already well acquainted with this mode of transmitting motion and varying the speed of rotation, we will say that the power is transmitted from one thin disc of cast iron to another similar disk on the same plane by means of a pair of brass discs mounted on one axis and pressed together by a spring so as to grasp the narrow projecting rims of the driving and driven disks. The rotation of the first disc is thus transmitted through the clamping discs to the second one, which is the driven or receiving disc, and as the clamping discs act only on the narrow rims of the two other discs, any change in position of the shaft of the clamping discs, such as moving it nearer to or farther from either of the other shafts, will alter the velocity of the driven disc. When it is midway between the rims of the two stationary discs the clamping disc acts as one wheel uniting two wheels, but not changing the rate of speed, while if it is closer to the driven disc the speed of that disk will be reduced in the proportion of the difference of the two acting circles on the intermediate or

clamping discs, and the opposite result is obtained when the clamping disc shaft is moved nearer to the driving disc. The inside of the clamping discs are made convex, and to permit them to hold the proper relation to the surfaces of the rims pinched by them in the different positions, they are provided with ball joint bearings and are mounted on a suitable lever, by means of which they may be moved to alter the feed.

In the case of the horizontal drill the primary motion for the feed is obtained from the spindle, and always holds the same relation to the spindle, whether the back gear or the single gear is in use; but in the case of the vertical drilling machine the motion is derived from the belt speed, and when the back gear is in use the group of feeds is coarser than when the belt is driving the spindle without the intervention of any gearing. The makers claim for this a convenience; as the feeds vary with the power of the machine to bear the heavier feed. In all the machines the action of the feed is

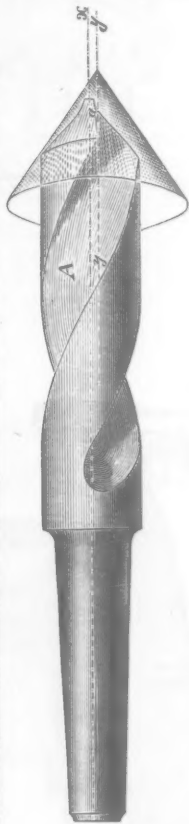


Fig. 14.

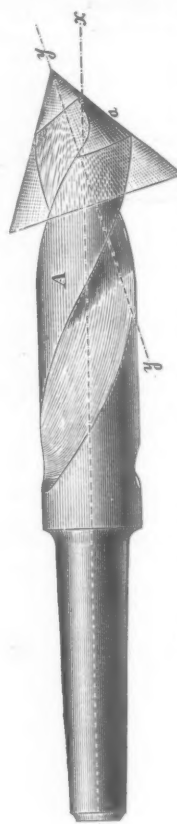


Fig. 15.

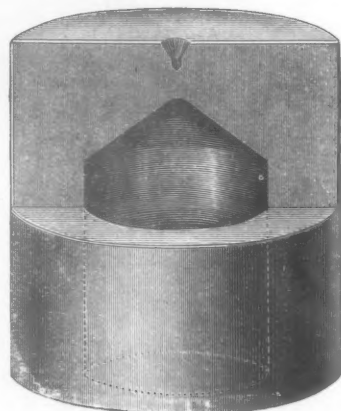


Fig. 16.

made instantaneous by the use of a fine-toothed chuck, which can be knocked into or out of gear with little effort. And by means of a very coarse feed screw a rapid hand feed, or as they call it, a quick return by hand, is secured. The table of the vertical drill is raised and lowered by power, and in the case of the radial drill the drilling arm is adjusted in the same manner.

The vertical drill, fig. 10, has a circular table, which can be rotated on its axis and at the same time the bracket which carries it is hinged to the vertical slide on the face of the post. Clamps are provided for the centre of the table and for the hinge, so that the table can be held firmly in any required position and the drill can be made to operate at any point on the surface of the round table. This form of table permits work bolted to place to be moved while fast to the drill table and then secured in position for being drilled. This table performs the functions of a compound table fairly well, and is less expensive. The vertical slide, to which the round table is hinged, is attached to the lifting screw on one side of the post by joints which serve as a hinge to permit the whole bracket to be swung out of the way when work is to be bolted to the base plate of the drill press.

The horizontal drill, fig. 9, has its table raised and lowered

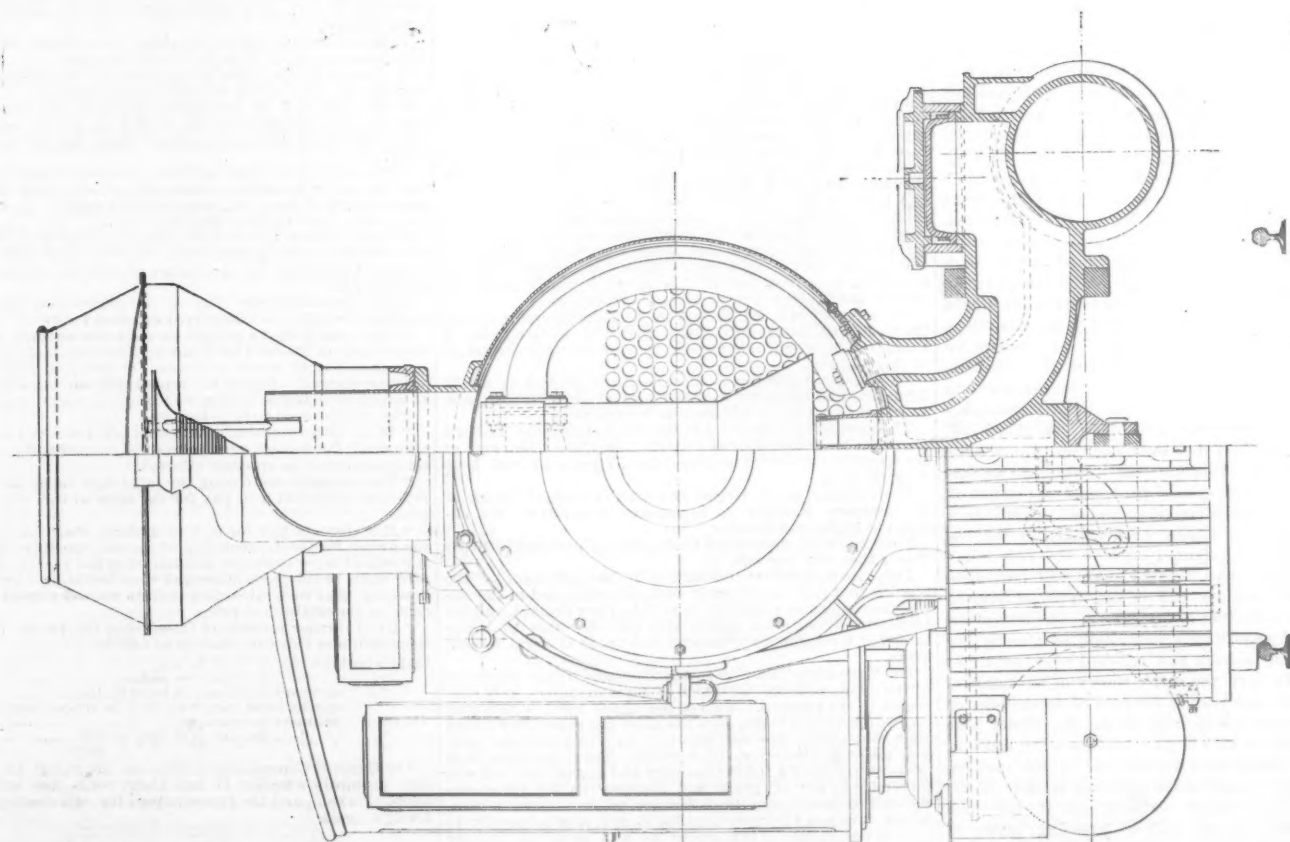
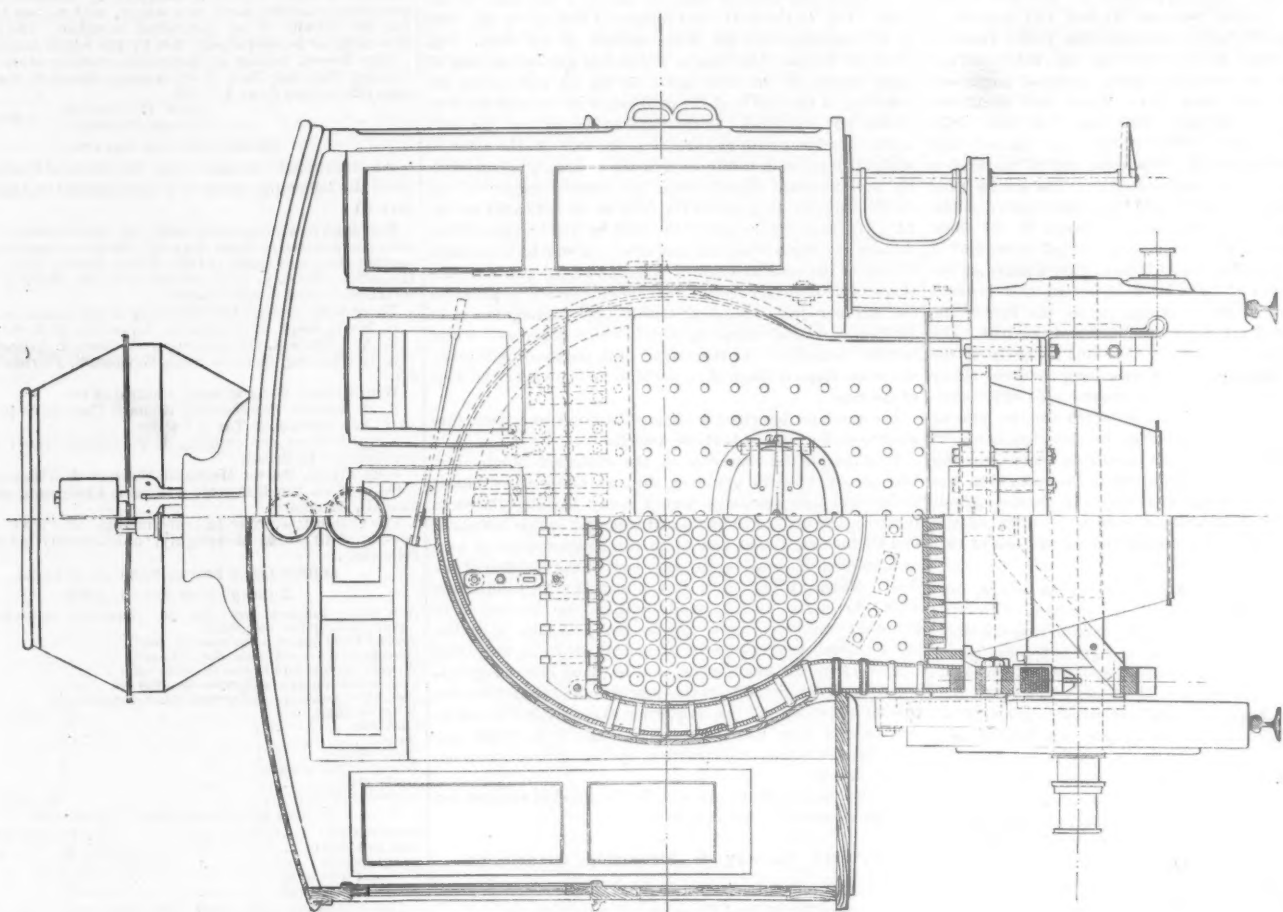
by hand, the cranks or the balance wheels for this purpose being all near each other and so placed as to be handy when work is being done. There is also an adjustable yoke to carry the outer end of the boring bar when such support is required.

The radial drill, fig. 11, is, as has already been said, driven by belt to the spindle from the cone at the base of the upright. The arm raised and lowered by power is attached to a bracket plate gibbed to the post with such extended surfaces as to do away with the need of any clamping device to fasten the slide when it has been set to any required height; but at the bottom joint of the hinge of the swinging arm there is a clamp to hold it in place while drilling. In reference to this clamp the makers say it is put on in case any work may require the radial arm to be made fast; but that so far as they have been able to determine, well centred and true running drills can be used at the extreme end of the radial arm without any tendency to move the arm.

The new car wheel boring mill exhibited by Messrs. Wm. Sellers & Co. is represented in fig. 12. In the specification of this machine it is also called by its makers a 50-in. boring machine; but as its specific duty is to bore car wheels, we describe it in relation to that function. The face plate will take work 50 in. diameter, but the chuck fitted to this machine is so arranged to carry car wheels up to and including 36 in. in diameter, with room, however, for special jaws if 42-in. wheels are to be bored. The boring bar is made with two cutters crossing the bar at right angles to each other, thus giving four cutting edges in pairs diametrically opposite to each other, and the machine is geared to do the utmost work that these four cutting edges will stand. The feeds are from $\frac{1}{16}$ in., the finest, up to $\frac{1}{2}$ in., the latter being employed when the finishing cut is being run through the wheel. A feed of $\frac{1}{4}$ in. is used in the roughing cut, making $\frac{1}{16}$ of an in. for each cutter to take at a revolution. We are informed that the use of four cutting edges not only enables a heavier duty to be exacted from each cutting edge, but it insures more accurate boring, because each pair of cutting edges steadies the bar in relation to the pair that is at right angles to it. The vertical slide which carries the boring bar is made heavy, well counterbalanced, and has all its sliding surface square and of good width. At the lower end of the vertical slide, close to where the boring bar is attached, and projecting in front of it, is a horizontal slide operated by hand to be used in facing off the hubs of those wheels that require to be dressed over the entire face of the hub, such as locomotive truck wheels. In this slide rest the tool is so placed that it begins its cut close to the bar, starting the already bored hole; the tool is so placed in relation to the bar as to serve in an admirable manner the purpose of the single cutter used to face off the narrow finishing projection left on ordinary car wheels, and which, dressed to the proper relation to the tread determines the position of the wheel on the axle. When the wheel has been bored this one cutter forced down on the cut finishes this part at a single cut. An adjustable measuring gauge to determine this distance is attached to the side of the stand that carries the vertical slide. The feed motion involves some peculiarities, one of which is the use, in connection with the train of gearing, of the diagonal shaft and the spiral pinion first introduced by the makers of this machine in connection with their planers for metal. The clutch that stops and starts the feed is provided with fine teeth, and we note that the engaging angle of these teeth is considerable, and that the same character of clutch is to be seen on the drilling machines from the same works. We are told that they are thus made to facilitate the coupling, the angle of teeth being the best that can be readily thrown out under cut. The action of the connecting mechanism of the feed is instantaneous.

From the driving cone on the back of the machine the power is carried to the face plate or table on which the wheel is chucked, through two spur wheels, and one pair of bevels; and there is a clutch to separate the spur system from the bevels and thus stop the rotation of the table and allow the use of the remaining driving mechanism to work a power crane for placing the work on and off the table. This crane, which is conveniently operated either from the front of the machine or at the side, is provided with an automatic stop motion to control it at the top and the bottom of its hoist. This crane attachment, worked by power, is very handy, and must afford a rapid and convenient means of setting the work. The table of the mill is carried on a circular tongue resting in a groove in the bed, in the same manner as the tables of William Sellers & Co.'s boring mills have always been carried, and which is familiar to most of our readers. In the centre of the table is an opening for the end of the boring bar, and below this there is an extension in the form of a pipe which enters a stationary pipe and carries the boring chips to the pit below the machine, and at the same time protects the running parts below the table from dust.

One of the novelties exhibited by Messrs. Wm. Sellers & Co. is a drill grinding machine, which is arranged to grind either flat or twist drills, or any other kind of double-flip drill, without the use of any bushings or other devices to adapt the machine to receive the kind of drill that is to be ground. All sorts of drills from $\frac{1}{8}$ in. in diameter up to and including 2 in. diameter, are held in the same chuck, in precisely the same manner, and the clearance is said to be the same, and as correct, theoretically, on the smallest drill as it is on the largest. The grinding is done on the flat side of a stone and not on the curved edge, and while the stone is running it is flooded with water, fed to it automatically, and delivered on the drill without splash or slop. The cover that incases the wheel acts as a security against accident, should the stone burst at a high speed. Fig. 13 shows the machine with a twist drill in place ready for grinding. The



CONSOLIDATION FREIGHT LOCOMOTIVE AT THE CHICAGO EXPOSITION.

Built by the BALDWIN LOCOMOTIVE WORKS, Philadelphia.

Consolidation Freight Engine at the Chicago Exposition.

The exhibit of the Baldwin Locomotive Works, of Philadelphia, at the Chicago Exposition, consists of an eight-wheel passenger and a consolidation freight engine of standard gauge, and of a passenger and a consolidation engine of 3 ft. gauge. The illustrations in the present number are of the standard-gauge consolidation engine.

The dimensions of this locomotive are as follows:

Kind of fuel used	Bituminous coal.
WEIGHT AND GENERAL DIMENSIONS.	
Gauge of road	4 ft. 8½ in.
Total weight of locomotive in working order, including two men	114,000 lbs. (Estimated)
Total weight on driving wheels	103,000 lbs.
Total wheel base	21 ft. 5 in.
Distance between centre of front and back driving wheels	14 ft. 0 in.
Distance from centre of main driving wheels to centre of cylinder	13 ft. 6 in.
Length of main connecting-rod, from centre to centre of journals	9 ft. 7 in.
Transverse distance from the centre of one cylinder to the centre of the other	7 ft. 0 in.

CYLINDERS, VALVES, ETC.

Diameter of cylinders and stroke of piston	20 in. × 24 in.
Horizontal thickness of piston over piston head and follower plate	4½ in.
Kind of piston packing	Steam packing.
Diameter of piston rod	3 in.
Size of steam ports	16 in. × 1¼ in.
Size of exhaust ports	16 in. × 2¼ in.
Greatest travel of slide valves	5½ in.
Outside lap of slide valves	¾ in.
Inside lap of slide valves	1-32 in.
Lead of slide valves in full stroke	1-32 in.
Throw of upper end of reverse lever from full gear forward to full gear backward, measured on the chord of the arc of its throw	4 ft. 0 in.
Sectional area of opening in each steam pipe connected with cylinders	15.9 sq. in.

WHEELS, ETC.

Diameter of driving wheels, outside of tires	49 in.
Diameter of truck wheels	29 in.
Size of main driving axle journal, diameter and length	7 in. × 8 in.
Size of other driving axle journals, diameter and length	7 in. × 8 in.
Size of truck axle journal, diameter and length	5 in. × 8½ in.
Size of main crank-pin journals, diameter and length	5¼ in. × 5¼ in.
Size of coupling-rod journals, diameter and length	3½ in. × 3½ in. f. & b. 4 " × 3½ " middle.
Length of driving springs, measured from centre to centre of hangers	2 ft. 10 in. front. 2 ft. 7 in. back.

BOILER.

Description of boiler	Straight top.
Inside diameter of smallest boiler ring	50 in.
Material of barrel of boiler	steel.
Thickness of plates in barrel of boiler	¾ in.
Kind of horizontal seams	lap seams, double riveted.
Kind of circumferential seams	Single riveted.
Material of tubes	Steel.
Number of tubes	268
Diameter of tubes, outside	2 in.
Distance between centres of tubes	2½ in.
Length of tubes, over tube plates	12 ft. 8½ in.
Size of fire-box, inside, length × width × depth from under side of crown	103½ in. × 42¾ in. × 53¼ ft. 50¼ bk.
Plate to bottom of mud ring	
Water spaces, sides, back and front of fire-box	3 in. 3 in. 4 in.
Material of outside shell of fire-box	steel.
Thickness of plates of outside shell of fire-box	¾ in.
Material of inside of fire-box	steel.
Thickness of plates in sides, back end and crown of fire-box	5-16 in. 5-16 in. ¾ in.
Material of tube-plates	steel.
Thickness of front and back tube-plates	¾ in. ¾ in.
How is crown-plate stayed, with girder or screw stays?	with girder.
Diameter and height of dome	32 in. × 30¼ in.
Maximum working steam pressure per square inch	130 lbs.
Kind of grate	rocking.
Width of bars	13½ in.
Width of opening between bars	¾ in.
Grate surface	30 sq. ft.
Heating surface in fire-box	117 sq. ft.
Heating surface of the inside of tubes	1,754 sq. ft.
Total heating surface	1,871 sq. ft.
Kind of blast nozzle, single or double	double.
Diameter of blast nozzle	3¼ in.
Smallest inside diameter of chimney	17 in.
Height from top of rails to top of chimney	14 ft. 6 in.

TENDER OR TANK.

Weight of tender empty	30,000 lbs. (estimated).
Number of wheels under tender	Eight.
Diameter of tender wheels	33 in.
Size of journals of tender axles, diameter and length	3¾ in. × 7 in.
Total wheel-base of tender	14 ft. 8 in.
Distance from centre to centre of truck wheels of tender	53 in.
Water capacity of tank (in gallons of 231 cubic inches)	3,600 galls.
Coal capacity of tender or fuel-bin	9,020 lbs.

ENGINE AND TENDER.

Total wheel-base of engine and tender	47 ft. 1½ in.
Total length of engine and tender over all	57 ft. 7 in.

The engine as exhibited was not in any way specially prepared for the Exposition. It is a fair sample of the usual manufacture of these works, and is one of a lot built for service on the Northern Pacific road.

MASTER CAR-BUILDERS' ASSOCIATION.

Seventeenth Annual Convention.

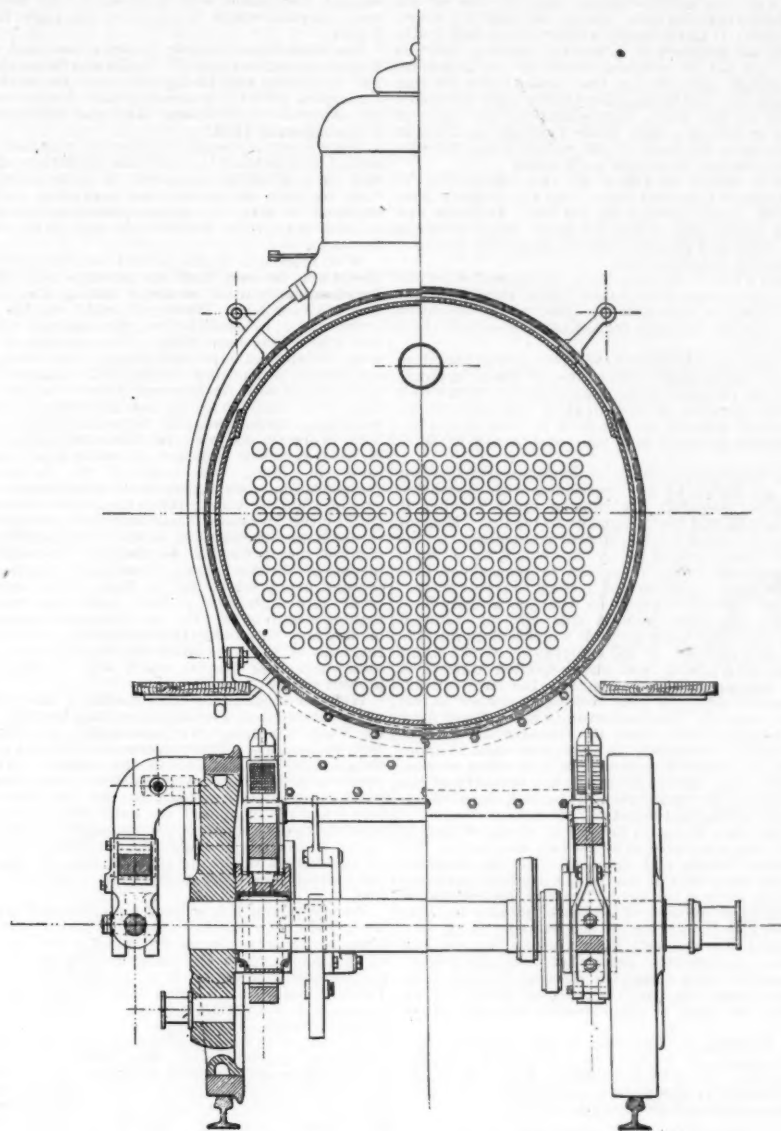
We supplement the telegraphic report of the proceedings of the first and second days of the convention, given last week, by a full report of the entire proceedings of the convention, given herewith.

FIRST DAY.

The Seventeenth Annual Convention of the Master Car-Builders' Association was held in the Appellate Court room in the Grand Pacific Hotel, Chicago, June 12, 13 and 14. The Hon. Carter Harrison, Mayor of Chicago, made an address of welcome to the convention, which was briefly replied to by President Garey. The roll being called, the following members answered to their names:

ACTIVE MEMBERS.

Aylesbury, Thomas, Kan. City, St. Joseph & Council Bluffs.
Bissell, Thomas A., Barney & Smith Manufacturing Co.
Blackall, R. C., Delaware & Hudson Canal Co.
Bryan, H. S., Chicago & Iowa, Chicago, Ill.
Burchard, C. H.



Consolidation Freight Locomotive at the Chicago Exposition.

Bushnell, R. W., Burlington, Cedar Rapids & Northern.
Chamberlain, W. E., Providence & Worcester.
Coon, Robert V., Troy & Boston.
Cooper, H. L., Indiana, Bloomington & Western.
Coulter, J. P., Ohio & Mississippi.
Davenport, W. R., Erie Car Works.
Demarest, George W., Northern Central.
Fletcher, John R., National Car Co.
Ford, M. P., Pittsburgh, Cincinnati & St. Louis.
Garey, C. E., New York Central & Hudson River.
Goodrich, Charles A., Fitchburg Railroad.
Gore, C. E., Lake Erie & Western.
Hackney, George, Atchison, Topeka & Santa Fe.
Hildrup, W. T., Harrisburg Car Co.
Hill, John, St. Paul & Duluth.
Hodge, John, Missouri Pacific.
Hoit, D., New York Central & Hudson River.
Keeler, Sanford, Flint & Pere Marquette.
Leighton, James T., New Haven Car Co.
Mainer, B. F., Jones Car Manufacturing Co.
McCarthy, H. C., Phila. & Erie Division of Pennsylvania Railroad.
McDevitt, B., Chicago, Ill.
McHenry, Robert, Delaware, Lackawanna & Western.
McIlwain, J. D., Great Western Division, Grand Trunk Railway.
McPherson, Reuben, Flint & Pere Marquette.
McWood, William, Grand Trunk Railway.
Mileham, J. N., New York, Lake Erie & Western.
Olmstead, E. A., New York Central & Hudson River.
Packard, L., Baltimore & Ohio.
Peabody, D. B., Illinois Midland.
Pendleton, M. M., Portsmouth, Va.
Phelps, B. N., New York Central & Hudson River.
Soule, R. H., Pittsburgh, Cincinnati & St. Louis.
Smith, Peter, New York Central & Hudson River.
Smith, S. V., New York, Pennsylvania & Ohio.
Steinbrunner, H., Cleveland & Pittsburgh.
Webster, H. A., New York Elevated.
Wicks, J. H., Merchants' Despatch Transportation Co.
Wiers, J. H. F., Toledo, Delphos & Burlington.
Williams, C. C., West Jersey.

REPRESENTATIVE MEMBERS.

Adams, F. D., Boston & Albany.
Blackwell, Charles, Norfolk & Western.
Cloud, John W., Pennsylvania, Northern Central, West Jersey, Philadelphia, Wilmington & Baltimore, Alexandria & Fredericksburg and Baltimore & Potomac.
Forsyth, William, Chicago, Burlington & Quincy.
Garey, Leander, New York Central & Hudson River.
Goodwin, H. Stanley, Lehigh Valley.
Haines, S. W., Pittsburgh & Lake Erie.
Henney, S. B., Wisconsin Central.
Hovey, Jacob P., Rochester & Pittsburgh.
Kenison, Chas. H., Maine Central.
Kohler, U. H., Wabash, St. Louis & Pacific.
Lentz, John S., Pennsylvania & N. Y.
Lyons, Henry D., Marquette, Houghton & Ontonagon.
Marden, J. W., Fitchburg Railroad.
McCrum, J. T., Kansas City, Fort Scott & Gulf.
Miller, Robert, Michigan Central.

Potts, Robert, Canada Southern.
Richardson, D. C., Boston & Maine.
Richardson, Ed., Shenango & Allegheny.
Snow, W. B., Illinois Central.
Townsend, Joseph, Chicago & Alton.
Verbryck, B. K., Chicago, Rock Island & Pacific.
Wall, E. B., Pittsburgh, Cincinnati & St. Louis.
Watrous, Geo. B., Detroit, Lansing & Northern.
Wildor, F. M., New York, Lake Erie & Western.
Williams, Chas. H., West Jersey.

ASSOCIATE MEMBERS.

Forney, M. N., Railroad Gazette, New York.
Raymond, J. H., Western Railroad Association, Chicago.
President Garey then delivered his annual address, as follows:

PRESIDENT'S ADDRESS.

Gentlemen of the Convention:

By permission of Divine Providence we have again assembled for the purpose of mutual advancement in the knowledge of constructing and repairing railway cars.

It is with much pleasure that I call attention to the revised constitution and by-laws adopted at an adjourned meeting held at Niagara Falls last October.

Much assistance and more rapid progress in the accomplishments of the aims of the Association is hoped for by the introduction of representative members. Under the revised constitution your executive members have the power to so direct the discussions of subjects that the best results to all interested may be obtained by mutual interchange of experience and opinions gained under the varied circumstances attending the transportation of passengers and freight in our northern and southern climates, and each member should contribute to make our meeting so interesting and instructive that the public will consult the proceedings of conventions, and the Association become more worthy of a name among the progressive societies of the age.

The progress made during the past few years toward cheap and rapid transportation by increasing the carrying capacity of freight cars from ten to twenty tons, has led some railroad managers to advocate the building of cars to carry thirty tons on eight wheels. It should be decided to increase the paying load to exceed five thousand pounds per wheel, would it not be advisable to make such increase the extreme limit admissible by our rails and bridges? This would require an entire change in size and strength of materials. Before advocating such change we should learn how much of the freight offered could be loaded to the extent of forty tons or more per car, without doubling their present size, what increase in the strength of wheels would be necessary, and what changes would be required at loading and terminal stations.

The present manner of warming passenger cars during the extreme cold weather in our northern states is far from satisfactory. How to furnish heat without injury to passengers from fire, steam, or hot water in case of accident is one of the problems yet to be solved; and as inventors have not as yet presented a device removing such liabilities, it is incumbent on all master car-builders to study carefully now to arrange the available heaters to obtain the best results as to comfort and safety.

How to prevent accidents to trainmen while performing

* This company is engaged in the manufacture of wheels and tires.

before you. It was hinted that the inventors had not perfected their plans, and that it was not fair to report the results until further opportunity had been given them for improvements already planned. A tubular iron car will be found in the National Exposition of Railway Appliances on the east side and near the southern end of the annex, on the same side as the exhibit of modern locomotives. We respectfully urge the members of this Association to examine this car carefully.

All are ready to concede that we must make either iron or steel take the place of wood in car construction far more largely than has yet been done and yet each seems to be waiting for some other to take the lead. It has taken many years to bring wooden cars to their present excellence, and we should not expect to perfect iron cars all at once. We learn of a steel brake beam which has been invented by one of our eastern brethren which is proving a great success. We hope to hear from Mr. Marden how they are performing on his road, where we are informed they are in use. Judging from present appearances the change from wood to iron and steel will be a gradual one, piece by piece, and we hold it to be the duty of each master car-builder to report to the committee having this matter in charge every such substitution as soon as it has been demonstrated to be a success, that all may profit by his experience.

Iron trucks seem to be working their way into favor more and more. The same may be said of iron body bolsters. No doubt changes may be required in shape and proportion to meet developed defects; this must be expected. The world was not made in a day, nor should we expect the perfected iron and steel car of the future to spring into perfect shape at once. The iron cars built by the New York Central Railroad 25 years or more ago are still in use, and have shown great durability, notwithstanding imperfections in construction incident to being built so long ago.

If our Association had funds at command to permit experiments to be made, the good work would be greatly expedited and we would sooner see the iron and steel cars of the coming time.

W. R. DAVENPORT, } Committee.
E. A. OLMSTEAD, }

Mr. MARDEN spoke of a steel brake-beam in use on some passenger cars of the Fitchburg Railroad. The beam is manufactured by the Washburn Iron Co. of Worcester. With it the brake-head can be made very much lighter than is practicable where the wooden brake-beam is used. Its cost exceeds very little if at all that of the wooden brake-beam. The Fitchburg Railroad will undoubtedly apply it to all their rolling stock, as fast as the wooden beams give out.

The report of the Committee on Standard Wheel Gauge and Form of Section, was read by the Secretary, also a minority report signed by Edward B. Wall.

REPORT ON STANDARD WHEEL-GAUGE.

To the Master Car-Builders' Association:

Your Committee on Standard Wheel Gauge, and Form of Section for Treads and Flanges of Wheels, would respectfully submit the following report:

From the many and various answers received to our inquiry as to size of wheel gauges used by different roads having the 4 ft. 8½ in. gauge of track, we find a large majority favor the clearance of ¼ in.; and your Committee recommend this clearance, and also recommend that wheels should be gauged between the flanges of the inside of the wheels, as that point remains fixed, and governs the position of the distance in the guard rails; while the wear on the front of the flanges continually changes their shape, and it leaves no definite point to work from in refitting old wheels. We recommend that the length of the wheel or the distance gauge between flanges be 4 ft. 5½ in.

In recommending a "standard form of section for the treads and flanges of wheels, and whether experience indicates that any advantages result from the use of conical forms for the treads of wheels, and if so, how the advantages are shown," your Committee find this a very complicated question, and one which has not been experimented with sufficiently to justify a positive reply. There is quite a difference of opinion on this subject, which seems to be more from theory than from practice. From the few experiments that have been made, we find that where cast chilled wheels have been used, and the wheels properly chilled, it made no difference in the wear of the wheel or the flanges, so far as we could discern, whether the wheels were coned or not; the wear was equal. The effect of the experiment must have been on the rails, they being the softer of the two metals; but when the nature of the metal of the steel-tired wheel being so similar to the metal in the rail, there is an affinity or abrasion takes place, and the flanges of the wheel wear more rapidly than the rail, unless the wheels are properly coned or case-hardened to prevent it. It has been the experience of one of this committee, that increasing the coning prevents the rapid wear of steel-tired wheels.

The length of the outside rail on a 5 degree curve is 5 ft., on a 10 degree curve, 10 ft., and on a 20 degree curve, 20 ft. longer in 1,300 ft. than the inside rail. The coning of wheels must necessarily benefit the wheels in passing through such curves. The wear upon the wheels may not be directly due to their slipping while passing through such curves, but the rails at such points invariably show more scaling and abrasion than those laid on tangents.

Your Committee respectfully submit the accompanying drawing of wheel or distance gauge; also of full size forms of section for the treads and flanges for chilled iron and for steel-tired wheels; and recommend their adoption, and also recommend that the curve at the angle of the rail-head conform to the curve of the fillet in the flange of the wheel, which is a radius of ¼ in.

R. C. BLACKALL, } Committee.
D. HOIT, }

MINORITY REPORT.

R. C. Blackall, Chairman:

I unite with yourself and Mr. Hoit in all of the recommendations of this report except that relating to the form of section for tread of wheels.

I believe that not only is the coning of no advantage to the wheel, but that it is a detriment. The purposes of its design are only realized on new wheels running on curves at fast speeds; under such circumstances it possibly secures smoother riding, but on slow trains running on curves, and on both fast and slow trains running on tangents, it causes bad riding. It creates a lateral motion—a "wobbling and sea-sawing," which could not exist with cylindrical wheels. Then again this one advantage, which it has when the wheels are new, and are under fast trains on curves, is soon obliterated by service; for service, we all know, tends to wear the wheels cylindrically.

Another objection is the small amount of bearing surface that rests upon the rail when a wheel is coned. This certainly must produce an undue amount of wear upon both the rail and the wheel.

Surely, if we believe in conforming the curve at the angle of the head of the rail, recommended in the body of the Report, and also in the Report of the Committee on Sharp Flanges, we should endeavor to make the tread of the wheel conform to the face of the rail and do away with coning.

I therefore respectfully suggest that we amend the report

and recommend that wheels be made with cylindrical treads instead of conical.

E. B. WALL.

Mr. BISSELL said that his company at one time had a number of cylindrical steel tires which caused them much trouble owing to sharp flanges. Their experience came very near upsetting the paper car-wheel. But the next lot of tires they got were coned and produced very different results.

Mr. RICHARD WILLIAMS said that in England there was great diversity of opinion on this subject, though in that country they had long ago passed the flat tread period of their railway life. They were decidedly of opinion that no matter of what material the tire be made, nor of what material the rail be made, nor whether the line be straight or curved, there must be a certain amount of cone in the tread of the wheel. As to what the amount of cone should be, there was a diversity of opinion, but the prevailing practice was one in twenty.

Mr. GOODWIN moved to amend the report by inserting the recommendation that the width in the clear between the wheels be ¼ in. more than the committee had reported it, making it 4 ft. 5½ in. instead of 4 ft. 5 in.

Mr. VERBRYCK moved to amend by making it 4 ft. 5½ in.

Mr. WILLIAMS asked to be allowed to express his astonishment at the fact, which he then learned for the first time, that there were railways in this country of different gauges running continuously with each other. He had not thought it possible that such a state of things could exist. If there was one subject which more than another should be dealt with promptly and decisively, it was uniformity in the gauges of lines.

Mr. CLOUD said that about a year ago the Pennsylvania Railroad laid down a mile of track of 4 ft. 8½ in. gauge. The gauge was so altered without the knowledge of the engineers, who did not discover any difference. With the aid of a dynamometer it was found that there was no appreciable difference in the resistance so long as the train was on a tangent, and no appreciable difference on a 3-degree curve. They were perfectly well satisfied that ¼-in. clearance was ample, instead of ¼ in. Where the curve was 9 degrees, with only ¼-in. clearance between the wheel gauge and the track gauge, they did find an increase in the resistance.

After some further discussion it was agreed to refer the question whether the distance between the flanges should be 4 ft. 5½ in. to the Association for decision by letter-ballot.

On motion of Mr. GOODWIN it was agreed that the report of the committee as amended on the action of the convention, be referred to the Association for vote by letter-ballot. This, he explained, would include the form and section of the tread, the plan and section of the flange and the measurement of 4 ft. 5½ in.

The report of the Committee on the Economy of Grinding Cast Iron Wheels was read and accepted.

[This report was published last week.]

Mr. BISSELL called attention to the importance of having a six-pointed dog. There was much advantage in having so many points of contact at equal distances from the centre.

Mr. WILDER and Mr. MILEHAM said that they had obtained very good results from the grinding machine.

The following resolution was, on motion of Mr. LENTZ, adopted:

"Resolved, That the report be spread on the minutes and that the Association approve the recommendation of the Committee that six dogs be used for centering the wheels."

The subject of steel-tired wheels with wrought-iron centres being called up, Mr. MCWOOD said that he had about 2,000 of those wheels in service. Sharp flanges had occasioned some trouble, and these he ascribed to the unequal hardness of the tires. In other respects the wheels had given very good results. Their highest mileage at present was 474,000. The size of the wheel was 43 in.

Mr. WILLIAMS said that in England they had never met with any success in the use of cast iron wheels, and had at last wholly discarded them. The popular wheel in England now for freight cars is the wrought iron wheel, solid or with spokes, and a steel tire. On most of the large lines a steel-tired wheel with a teakwood centre is used for passenger coaches. He thought that fifty years hence the chilled wheel would be a thing of the past in this country. For freight cars the diameter of wheels, in England, is 36 to 39 in., for passenger cars 42 in.

The report of the Committee on Refrigerator Cars was read and accepted.

[This report was published last week.]

Mr. CLOUD said that his company was now building cars to do refrigerator business without the use of salt with the ice. What is wanted is a cold atmosphere, but not too cold, and a pure atmosphere. It was said that the atmosphere must be dry, but he thought that all refrigerator cars had an atmosphere at the dew point unless they used an absorbent. When you shut the door, having put the load in and inclosed in a car air at a high temperature, at the same time as the temperature falls by the cooling action of the ice, there will be a deposition of moisture, because the air cannot contain as much moisture when the temperature is lowered as it could when high, and at that time is the maximum demand of the refrigerator for extra moisture from the air, and the car must be so constructed that this moisture will not be deposited on the freight, but on the ice, or in the ice box, or along the line of the drip-water. Once cooled, however, and the car can be cooled in an hour or two, there is no more moisture to be taken care of, unless the freight gives off moisture, or the doors are opened and outside air admitted.

The circulation is caused by gravity; the descent of cold and the ascent of warm air. A difference of two degrees in temperature between the part of the car where the cold air descends and the part where the warm air ascends is sufficient, with the height which they obtain, to maintain a circulation that will keep the temperature below forty. He thought the recommendation in the report that all the sides of the ice-box should be exposed to the car fallacious. The less exposure of the ice-box to the car the better.

The report of the Committee on Heating Cars was read by the Secretary and accepted.

REPORT ON HEATING CARS.

To the Master Car-Builders' Association:

Your Committee appointed at the last regular convention to investigate and report as to what are the elements of safety, economy and comfort in the various methods of heating cars, respectfully submit the following report for your consideration:

Letters of inquiry were sent out to thirty of the most prominent roads in the country, asking for information on this subject, and there were answers received from eighteen, as follows: Six in favor of the Baker & Smith Heater, four in favor of Johnson Heater, two in favor of the Gouge Heater and Ventilator combined, two in favor of the Spear Heater without the air pipe, two in favor of the Searls Heater, and two report using the common wood burner stove.

There is no doubt that there has been considerable improvement made in heating or warming cars within the last six or eight years, still from the reports which your Commit-

tee has received, there would seem to be objectionable features to nearly all of the above-named appliances for warming cars; some are complained of as being very expensive to maintain and keep up in anything like good working order; others are easily deranged, and are liable to get out of order.

We are glad to say, however, that the old system of stove-heating, rendering one part of car uncomfortably cold, and the other part uncomfortably hot, together with the smoke and gas discharging from the stove into the car, has been very much improved, where steam or hot water heaters have been placed in use in the place of the common coal or wood stove.

You will notice that there are three very important requirements in heating passenger cars—safety, economy and comfort; and your Committee, after giving the matter a very careful investigation, is of the opinion that to obtain safety and economy it is very desirable that the heater should be placed outside of the car.

All stoves or heaters placed inside of the cars are decidedly objectionable, from the dust and dirt occasioned by attending the fire, and the gas and smoke from the same make it desirable, to say the least, to get rid of them from the inside of the car, and the room taken up and occupied by the stove or heater is of too much value to be wasted, if any form of heater can be successfully devised that will heat and warm the car from the outside, and thus render an inside stove unnecessary.

Your Committee has been informed that on the Reading Railroad there is in use a hot air heater placed outside under the car, but it has been reported that in very cold weather it has been found necessary to double glaze all the windows in the car in order to keep the car sufficiently warm.

Your Committee is of the opinion that steam in all cases is much preferable for heating cars on account of its rapid circulation and the ease with which it could be controlled to suit the varied changes in the weather.

In case of derailment or collision safety demands the heater to be placed outside of the car.

Your Committee would not feel warranted at this time to recommend any one particular heater, but would recommend that, if found practicable, cars should be heated from the outside.

JOS. W. MILEHAM, } Committee.
C. E. GAREY, }
J. W. MARDEN, }

The Auditing Committee reported that they had examined the accounts and found them to be correct.

The Committee on Correspondence and Resolutions presented a resolution of thanks for the hospitalities tendered to the members of the Association during their stay in Chicago.

THIRD DAY.

The Committee on Decorating and Furnishing Passenger Cars presented its report as follows:

REPORT ON DECORATING AND FURNISHING PASSENGER CARS.

Your Committee appointed at the last annual meeting to report on the Decoration and Furnishing of Passenger Cars, with instructions to indicate the principles which control the interior and exterior decoration of passenger cars, and how both it and the comfort of cars may be improved, beg leave to report:

In treating the subject of furnishing and decoration of passenger cars, we do not intend to enter into detail to any great extent with each particular part necessary to the construction of a first-class passenger car, as the subject is too comprehensive to be embodied in a report of this character. The wording of the instructions to the committee does not limit the latitude of our duties, and we take it that it is the intention that we should speak of all important parts necessary for the safety and comfort of the passenger. As good trucks are indispensable to both safety and comfort, great care should be exercised in the size and quality of axles, finish of journals, mating or pairing of wheels, exactness in pressing to gauge and equal distance from journals, quality of journal bearings, quality and uniformity of castings, a careful adjustment of springs to weight to be carried, and exactness in all the details of construction.

As the platform and brakes new in general use seem to give the maximum of satisfaction for safety and comfort, we have no improvement to suggest.

We now come to the superstructure or body of the car, on which a great deal might be said, but we will mention but a few points. As utility is of first importance, proper care should be exercised to produce great strength to insure safety and durability. Keeping in view symmetry of outline, plain and neat style of finish, with a very little decoration, will, in our opinion, produce the best result.

Interior.—As the interior of the car is the home of the traveler, all of its appointments should be designed with a view to make it comfortable, attractive, and thus ameliorate the tedium of journey. In order to accomplish this result, good seating, and warming, and ventilation, two clean saloons, pure cool water and commodious lavatory, are all necessary adjuncts.

Seating.—As the various designs adopted by first-class roads are quite satisfactory, we refrain from mentioning any particular style.

Heating.—The principle of placing pipes under the seats, supplied with steam or hot water, and thus distributing the heat evenly over the car, gives most satisfactory results. At times, in this and higher latitudes, this system even does not meet the requirements. To meet this contingency we recommend double windows, the inner sash movable, to be taken out in summer.

Ventilation.—One of the most satisfactory now in use is produced by pivoting the deck sash and transom sash over end doors. To prevent cinders from entering the car, place 36-mesh plated brass wire-cloth outside of deck sash.

Saloons.—Should be well ventilated and good size, and supplied with ventilated hopper and ventilated urinals; and for the covering of the floor of saloon use a sheet copper about 23 gauge, fastening down same by nails through a flange turned up about 1½ in., but no joints or nails or screws in the floor surface. All drip-pipes and pans should be porcelain.

Water.—A liberal supply of pure cool water should be kept in the cooler, easily accessible to all persons in the car, but a suitable lavatory is a convenience that modern travel is entitled to, and necessary to make up the maximum of comfort, especially in long journeys.

Finish of Interior.—If rich woods in mahogany, rosewood or woods of like character are used, we should suggest using but one kind of wood for the entire finish, using light woods, if at all, for the ceiling only. If mixed woods are used, we would suggest that those woods that have mild contrasts in color, as they give the most pleasing effect when properly distributed or arranged. As to style and amount of decoration, no exact rules can be given. While one road may finish with rich wood ornamented with elaborate carvings and costly ceilings, another may produce as pleasing results by using cheaper woods carefully arranged, giving harmony of color, symmetry of outline, a little neat and tasteful decoration. One rule, however, should be strictly adhered to, that is to carry out the same style of decoration, carving, embossing and painting, so that the entire make-up

of each car will be harmonious. All of which is respectfully submitted.

T. A. BISSELL,
J. S. LENTZ,
W. B. SNOW, } Committee.

Mr. AYLESBURY said that it was the practice on the road he represented to line the floors of saloons in cars with galvanized iron with a fluting of 3 or 4 in., which is nailed down with tin nails and then soldered. This was found to be an excellent means of keeping bad smells out of the car.

Mr. BISSELL had found it desirable in his practice to make the lining of the saloon floor of one sheet, and so heavy as to obviate the necessity of perforating the floor with nails or screws to keep the lining down. Nails and screws, however securely put in, are liable to become loose and to allow water to get through and settle upon the floor.

The Committee on Standard Freight and Passenger Car Trucks presented its report. A letter from Mr. GEORGE WESTINGHOUSE on the same subject was also read.

REPORT ON STANDARD FREIGHT AND PASSENGER CAR TRUCKS.

To the Master Car-Builders' Association:

GENTLEMEN: The Committee on Standard Freight and Passenger Car Trucks are unable to make a final report, and this report relates to freight trucks only.

The recent changes in the methods of freight traffic in the direction of heavier loads and higher speeds have shown the necessity of a truck different from any now existing. We are just now experiencing a revolution in truck construction, and it is probable that the next year will develop more improvements in freight trucks than have been made in the last eight or ten years. It is not yet time, therefore, for this Association to decide upon a standard freight truck, and the best work your Committee can do is to indicate the improvements which modern freight traffic demand for this part of a car, and to note carefully the progress which the different roads make in this direction.

1. The required strength of the truck depends upon the decision as to what is the most economical capacity of a freight car, and also what is the most economical speed for freight trains, for it is possible the freight may be carried as cheaply by increasing the speed of trains as by increasing the capacity of the car. A standard truck cannot be recommended or adopted until the load, which determines its proportion, is decided.

2. Shall the standard truck have a swing-bolster or a rigid one? Car builders are not entirely united in recognizing the advantages of the swing bolster. It may be stated as a general rule that all roads which have used them to any extent prefer them to the fixed centres. Many car-builders who use the rigid centre believe in the merits of the swing bolster, while others do not think it necessary.

This is a proper question for the Association to discuss, and it should have special attention in the discussion of this report.

The advantages claimed for the swing bolster are: (1) Less resistance on the rail; (2) less repairs to both truck and car body; (3) less repairs to the track.

3. The standard truck should have the brake beams situated between the wheels, and suspended from some part of the truck which remains a fixed distance from the rail.

4. The design should be such as will admit of the use of automatic train brakes.

5. There should be few parts, simple in shape, and so constructed as to be easily removed for repairs.

6. The material should be iron or steel.

The Committee are indebted to the members who replied to their circular for valuable opinions and suggestions which have been embodied in the report.

They hope that the discussion of the points here presented will make the requirements of the standard truck so clear and definite that it will not be difficult to design it, and that at the next meeting they may be able to present a design worthy of your consideration.

ROBERT MILLER,
WM. MCWOOD,
WILLIAM FORSYTH, } Committee.

Mr. HILDRUP discussed the subject of trucks at some length. He spoke strongly in favor of the suspension truck, and predicted that the principle embodied in this device would revolutionize the railway machinery of the world.

Mr. CHAMBERLAIN had made trials of different trucks, and all his experiments had resulted in favor of the suspension truck.

Mr. ADAMS hoped to see the suspension truck adopted universally as soon as some few defects in it, which he believed could readily be removed, were remedied. This truck was liable to a certain extent, as was the diamond truck, to getting out of square.

Mr. CLOUD was disposed to treat the subject in a more conservative way. The expenditure for the manufacture of trucks in the country was such an immense thing and had, if he might use the expression, so much inertia that it was unreasonable to suppose that the line of progress would between now and next year wholly change its course. It was a matter of more concern to determine how a much larger sum than would probably be spent for suspension trucks should be laid out. If the discussion tended to show how to expend money for the sort of trucks that will be built, it would be much more profitable. He did not believe that one-hundredth of one per cent. of the money expended for trucks during the coming year—stating the figure at random—would be expended for suspension trucks. He did not mean to say that the suspension truck was not a good truck; he did not know. Nor did he mean to say that it would not ultimately prevail. He did not know whether it would or not, nor did any one else.

Mr. MARDEN had found one objectionable point in the suspension truck, and that was its side-bearing movement.

The CHAIR appointed M. N. Forney as a committee to prepare a memoir of Howard Fry, and F. O. Adams a committee to prepare a memoir of Alpheus Gleason.

The report of the Committee on the Causes of Accidents to Trainmen was presented.

[This report was published last week.]

Mr. FORNEY in opening the discussion said that the terrible amount of suffering resulting from the bad condition of freight cars must appeal to the humanity of every one who gave the subject a moment's consideration. On car-builders more than on any other officers of railroads depended the safety of the trainmen. To find fault with cars in a general way had but little effect. Details must be investigated. The committees should present reports pointing out specifically the parts of cars that are defective and dangerous.

Mr. KIRBY was sorry to say that not one car in 500 was built according to the recommendations made by the committee in 1879, which recommendations were the result of very careful investigation.

After some further discussion, in the course of which it was pointed out that the recommendations of the committee were not in all instances harmonious with the selves, the following resolution was proposed by Mr. FORNEY and adopted:

"Resolved, That a committee be appointed to prepare a

circular calling the attention of railroad managers to the standards and the appliances for the safety of trainmen which have been recommended by this Association, and that this committee be urged to do everything in their favor to secure their adoption."

Mr. GOODWIN, referring to the recommendation of the committee, "that where double blocks are used they measure not more than 30 in. from out to out," moved to strike out the words "not more than," which was agreed to. Two lines further down it says, "where the single block is used it should be less than 28 in. long." I move to strike out the words "not less than" and to change 28 to 30.

After some discussion Mr. WILDER moved "as an amendment to Mr. Goodwin's motion, that the 30 inches in the committee report be made 28 inches."

Agreed to.

The following resolution, offered by Mr. WALL, was carried:

"Resolved, That the Executive Committee be instructed to revise the resolutions relating to the recommendations of standards, and report to the next annual meeting what action, if any, is required to correct existing errors and discrepancies in the previous action of the Association."

Mr. GOODWIN proposed the following resolution:

"Resolved, That the sizes, dimensions and position of the dead-woods, as recommended in the amended report of the Committee on Causes of Accidents to Train and Yard Men be submitted for decision by letter ballot according to the constitution."

Agreed to.

A committee from the Car Accountants' Association attended the convention with the object of securing the cooperation of Master Car-Builders in efforts which the Car Accountants are making to bring about an improvement of the prevailing method of lettering line cars. A committee of Master Car-Builders was appointed during the convention to confer with the former committee and report. A report from them was read by the Secretary.

The report of the Committee on the Most Economical Carrying Capacity for Freight Cars was read.

[This report was published last week.]

The discussion of this report was brief. Mr. WALL spoke of some cars of 50,000 lbs. capacity, which were built for the Pennsylvania Railroad. They were of the same length as hopper gondola cars, with higher sides. He did not know whether a large axle was used under those cars or not.

"On the Pan-handle," he continued, "we have not had any of those cars, and we do not expect to get any for some time to come. We found that we could not run cars of 50,000 lbs. capacity over our road and our bridges safely. One car of that capacity can, no doubt, be safely run over any road now in existence which has a good road-bed, but where two or more such cars run together, considerations come in which render their use unsafe."

At the close of this discussion a vote was taken as to the place for holding the next annual meeting. Saratoga was selected.

The following resolution, proposed by Mr. LEANDER GAREY was adopted:

"Whereas, It is a common practice to store line cars on side tracks during summer months or dull times away from home after they have been in severe service; and

"Whereas, Many of the cars after being so stored are found to be more or less out of proper condition, so that they need more or less repairs, and when put into service cause much detention to traffic and many transfers;

"Be it resolved, therefore, That it is the sense of this meeting that all line cars owned by foreign companies should be returned to their owners instead of being stored on foreign tracks, and that a competent man should be detailed to inspect the stored cars and to arrange to have the necessary repairs made during the term such cars are out of service."

It was agreed that the Committee on Subjects should be allowed to make its report to the Executive Committee.

Mr. GOODWIN offered the following, which was agreed to:

"Resolved, That a committee of seven be appointed, representing the largest car-owning roads who send members or representatives to the Master Car-Builders' Convention, said committee to confer together and if possible agree upon a standard house car with details of all parts, whose maximum load shall be 60,000 lbs., said committee to report to the Executive Committee, the Executive Committee, when ready to report, to send a copy of the report to each member of the Association for examination. The Executive Committee to report at next annual meeting."

Mr. Leander Garey was re-elected President and Messrs. Ford, McWood and Cloud were re-elected, respectively as First, Second and Third Vice-Presidents. Mr. Verbruyck was re-elected Treasurer. Messrs. Packard and Lentz, whose terms had expired, were re-elected members of the Executive Committee, and Mr. Bissell was elected a member of that committee in place of W. J. Christopher, resigned. Mr. Wall was empowered to cast the vote of the Association for these officers.

The convention then adjourned.

The Executive Committee held a meeting immediately after the adjournment of the Association, and reappointed Mr. M. N. Forney Secretary, and fixed his salary at \$1,000 per year. He said that he would accept the position temporarily, but would not agree to keep it any specified time, as he might find himself unable to attend to the duties of the office, and hoped that the Executive Committee would soon appoint some one else to the office.

American Society of Civil Engineers.

The fifteenth annual convention began at St. Paul, Minn., on Tuesday, June 19, with a large attendance. The convention organized by the choice of George S. Greene as temporary chairman.

Addresses of welcome were made by Governor Hubbard, of Minnesota, and Mayor O'Brien, of St. Paul. These were responded to by Chairman Greene.

A permanent organization was then made, with Mr. D. C. Sheppard, of St. Paul, as Chairman, and the convention proceeded to business.

A paper on Building the Dyke at the Falls of St. Anthony was read by Col. Farquhar, United States Engineers. This was followed by a paper on the Cost of Steam Power, by Charles E. Emery.

At Wednesday's session the two papers read on the previous day were discussed at considerable length.

Papers by Prof. Egleston, of Columbia College, on Accidents to Steam Pipes from the use of Slag Wool; by John Lawler, on a Pontoon Bridge over the Mississippi; and by G. Lindenthal, on the Rebuilding of the Monongahela Bridge at Pittsburgh, were read and discussed.

On Thursday the convention was to hold a session at St. Paul, and on Friday at Minneapolis.

The attendance is larger than at any previous convention, 175 members being present, accompanied by 90 ladies. Many courtesies have been extended to members, and the meeting, as far as it has gone at the present writing, is a very successful one.

Master Mechanics' Association.

The annual convention of the Master Mechanics' Association began in Chicago on Tuesday, June 19, the meeting being called to order at 10 a. m. An address of welcome was made by Mayor Harrison, of Chicago.

The President then delivered his annual address. The roll being called, 85 members answered to their names; 52 new members were then admitted.

The reports of the Secretary and the Treasurer were read and appropriately referred.

A long paper on Locomotive Improvements was read by Mr. Dean. This was followed by a long discussion.

At Wednesday's session a paper on Premiums to Locomotive Engineers was read. The Committee on Boiler Construction submitted its report, which was discussed at length. The report of the Committee on Spark Arresters was read and discussed. The Committee on Extended Smoke Boxes submitted its report, after which the Convention adjourned until Thursday.

In the afternoon the members visited Pullman by invitation, in a special train.

American Society of Mechanical Engineers.

The annual meeting began in Cleveland, O., June 12, with a large attendance. The members were welcomed by Mayor Farley and the President, Mr. E. D. Leavitt, Jr., made a brief address, when the Society proceeded at once to business.

Mr. J. F. Holloway, of Cleveland, then read an elaborate paper on the Marine Engines of the Lakes, embodying a history of the development of marine engineering as applied to lake steamers, and a description of a device for getting them off the dead centres.

Mr. Howell Green, of Jeannette, Pa., then read a paper on the Development of the Winding and Pumping Machinery of the Anthracite Coal Regions, which was of much interest.

This was followed by a paper on Economy in Lubrication of Machinery, by Mr. George N. Conly, of Wilmington, Del. This paper called out some discussion.

After adjournment the members were entertained by the Cleveland Civil Engineers' Club.

SECOND SESSION.

On the second day reports were presented by the Council, the Treasurer and the Tellers, and a number of new members were elected.

Mr. W. F. Duffie, of Bridgeport, Conn., then read a paper on Balancing Vertical Engines, which was followed by a lively discussion.

Mr. W. E. Ward, of Portchester, N. Y., read a long paper on Béton in Connection with Iron as a Building Material.

A paper by H. R. Towne, of Stamford, Conn., on Cranes, was then read. This was followed by an address on the same subject by Mr. Thomas R. Morgan, of Alliance, O., who promised a future paper.

THIRD SESSION.

On the third day there was a long discussion on Mr. Towne's paper on Cranes.

A paper on the Bower-Barff Process for Protecting Metals was read by George W. Maynard, of New York, and called out a lively discussion, in which many members took part.

Papers were then read by Wm. J. Baldwin, of New York, on Standards in Pipe Fittings, and by Wm. Kent, of Pittsburgh, on Relative Values of Bituminous Coals.

Mr. C. C. Collins, of the Stearns Manufacturing Company, Erie, Pa., followed with a paper on Balanced Valves; and Prof. J. B. Webb, of Cornell University, on Reuleaux's Kinematic Models.

Before adjournment, Mr. J. F. Holloway announced that he had received a dispatch from Prof. R. H. Thurston, of the Stevens Institute of Technology, which at its commencement this week conferred the honorary degree of Doctor of Engineering on E. D. Leavitt, Jr., President of the American Society of Mechanical Engineers. This announcement was received with much applause. After a brief reply by the doctor, the meeting adjourned.

In the evening, the members attended a reception tendered them by citizens of Cleveland.

The Jurors at the Chicago Exposition.

The following is a list of the jurors selected to make the awards in the different classes at the Chicago Exposition of Railroad Appliances:

DEPARTMENT A.

Class 1. Rolling Stock.—Locomotives.—Reuben Wells, Superintendent Motive Power, L. & N. R. R., Louisville, Ky.; Jacob Johann, M. M. Wabash Railway, Springfield, Ill.; James Sedgely, Supt. M. Power, L. S. & M. S. R. R., Cleveland, Ohio. Substitutes—Charles R. Piddle, Supt. M. Power, T. H. & I. R. R., Terre Haute, Ind.; George Hackney, Supt. M. Power, A. T. & S. F. R. R., Topeka, Kan.; James M. Boon, Supt. M. Power, C. & N. W. R. R. Chicago, Ill.

Class 2. Cars.—Robt. Miller, M. C. B., Mich. Central R. R., Detroit, Mich.; R. C. Blackall, Supt. M. Power, D. & H. R. R., Albany, N. Y.; F. M. Wilder, Supt. of Machinery, N. Y., L. E. & W. R'y, Susquehanna, Pa. Substitutes—John Kirby, M. C. B., L. S. & M. S. R'y, Cleveland, O.; Robt. McKenna, M. C. B., D. L. & W. R. R., Scranton, Pa.; Geo. Hackett, M. C. B., Central R. R. of N. J., Elizabethport, N. J.

Class 3. Running Gear.—A. R. Underhill, Supt. M. Power, B. & A. R. R., Springfield, Mass.; H. L. Spaulding, Mgr. Pullman Works, Detroit, Mich.; Jno. P. Levan, M. C. B., Pa. R. R., Altoona, Pa. Substitutes—Jos. Wood, Supt. M. P., Pa. Co., Fort Wayne, Ind.; L. B. Paxson, Supt. M. Power, P. & R. R. R., Reading, Pa.; H. Stanley Goodwin, Lehigh Val. R. R., Bethlehem, Pa.

Class 4. Interior Finishing of Cars.—Joseph Townsend, M. C. B., C. & A. R. R., Bloomington, Ill.; John Bailey, M. C. B., C. M. & St. P. R. R., Milwaukee, Wis.; S. B. Bradley, M. M. G. R. & I. R. R., Grand Rapids, Mich. Substitutes—Robert McKenna, M. C. B., D. L. & W. R. R., Scranton, Pa.; F. B. Adams, M. C. B., B. & A. R. R., Allston, Mass.; William Snow, M. C. B., Ill. C. R. R., Chicago.

Class 5. Freight Car Appliances.—Leander Garey, M. C. B., N. Y. C. R. R., New York City; A. Rapp, Manager Pullman Palace Car Co., Pullman, Ill.; E. H. Benedict, M. C. B., C. & B. Q. R. R., Ancora, Ill. Substitutes—W. H. H. Alliston, M. C. B., C. H. & O. R. R., Cincinnati, Ohio; L. Packard, M. C. B., B. & O. R. R., Baltimore, Md.; R. McPherson, M. C. B., F. & Pere Marquette R. R., East Saginaw, Mich.

DEPARTMENT B.

Class 1. Machinery, Wood-working.—James W. See, Mech. Engr., Hamilton, Ohio; James M. Boon, M. C. B., N. W. R. R., Chicago; Robert Miller, M. C. B., M. C. R. R., Detroit, Mich. Substitutes—John Kirby, M. C. B., L. S. & M. S. R. R., Cleveland, Ohio; E. J. Barney, car manufacturer, Dayton, Ohio; L. Garey, M. C. B., N. Y. C. R. R., New York City.

Class No. 2. Iron-working Machinery.—H. B. Stone,

Arrangements have been made to build the Lamoyille Valley Extension, which will give this road a connection with the St. Johnsbury & Lake Champlain road and a line into New England.



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subject pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

THE DEVELOPMENT OF GRAZING ON THE GREAT PLAINS.

The numbers of the principal domestic animals in the United States Jan. 1 are reported as follows by the Department of Agriculture:

	1883.	1882.	Inc. or Dec.	P. c.
Horses.....	10,838,111	10,557,553	1. 280,558	2.7
Milch cows.....	13,125,685	12,637,911	1. 487,774	3.9
Other cattle.....	28,046,077	26,809,264	1. 1,028,815	3.8
Hogs.....	43,270,086	42,012,090	D. 1,257,996	3.0
Sheep.....	49,237,291	46,617,830	1. 2,619,461	5.6

The aggregate value this year is given as \$2,169,465,578, or about \$40 per head of population. The population this year increased about 3½ per cent., so that the increase on the whole was not more than in proportion to population. But this is a greater growth than there has been in grain production, as we have shown recently. The latter, as we have seen, has never since exceeded the production of 1879, and the increase in acreage has not been in proportion to the increase in population. We have looked upon this as an unfavorable sign, and it is to see whether there has been a diversion from grain-growing to stock-raising that this study is made. Further, we know that of late years almost the whole of the great ranch business of raising sheep and cattle on the arid plains west of the 100th meridian, where there is little agricultural land, has grown up. What are the proportions of this business? How does it compare with the stock-raising industry in the agricultural states? Has it driven them out of the business, and will they hereafter have to depend more on agriculture and leave the growing of wool and beef to the territories, where the animals do not require hay or shelter in winter? Unfortunately our data do not reach far back. But the comparison for these two years has considerable value as indicating a tendency. Large gains we find in everything but hogs, of which there were 3 per cent. less than last year. The largest gain is in sheep, of which very little has been said; but as the Department report says that a part of the increase is due to a more complete enumeration of ranch stock, and sheep were more likely than cattle to escape enumeration, perhaps the actual growth in these has not been so great as the tables indicate.

Where then has been this increase in live stock? Compiling the statements of the separate states by groups, we see that nearly three-fourths the increase in the number of horses has been in the country west of the Mississippi, and nearly half in the agricultural states north of Arkansas, while the gain in the states east of the Mississippi and north of the Ohio and the Potomac has been but 1.8 per cent. Horses are not a ranch stock, and the states where the number has increased

most are those in which agriculture is growing fastest. The country west of Kansas and Dakota has comparatively few.

With cattle it is very different. There has not been a state in the Union in which any decrease in the number of horses was reported; in no less than 19 is reported a decrease in cattle (other than milch cows), all of which except Arkansas, California, and Idaho are east of the Mississippi, and among them are Illinois, Ohio, Kentucky and all the South Atlantic States. Indeed, of all the states east of the Mississippi, only Massachusetts, Florida, Michigan, Wisconsin, show any increase in cattle, and their aggregate gain is but 75,591, and in the aggregate the number east of the Mississippi has decreased, as follows:

	1883.	1882.	Decrease.	P. c.
Cattle.....	11,708,935	11,757,271	48,336	0.4

Thus in this older part of the country there was substantially no change in the number of cattle. It is then in the states west of the Mississippi that the whole of the increase in cattle (not including milch cows) has taken place, where the numbers were:

	1883.	1882.	Increase.	P. c.
Cattle.....	10,337,142	15,346,187	990,945	6.5

This is a very large gain, indeed; but the notable fact developed by it is that nearly three-fifths of the cattle of the country, aside from milch cows, are west of the Mississippi, where the ranch country is.

Not all of the country west of the Mississippi is a purely grazing country, however. By far the larger part of the population is in an agricultural country. The ranch country takes in perhaps a third of Nebraska and Kansas, and half of Texas and the country thence west to the Sierra Nevada. On this side of it, though still west of the Mississippi, is a fertile agricultural country where cattle growing is a very subordinate branch of industry. We will do well to consider this separately—the northwest Mississippi Valley, the states of Minnesota, Dakota, Iowa, Nebraska, Missouri and Kansas.

These had:

	1883.	1882.	Increase.	P. c.
No. cattle.....	6,398,479	5,830,346	568,133	9.8

This is an enormous gain. It was chiefly due to the increase of the ranch cattle on the western border of this territory, as the gains are unexpectedly large (15 per cent.) in Kansas and Nebraska. Iowa gains 8 per cent., but Minnesota and Missouri not very much.

In the Southern states of Arkansas and Louisiana, there was a decrease in the number of cattle; but if we will take these and those just mentioned from the trans-Mississippi roads, we shall have the grazing country—or all but the western border of Kansas, Nebraska and Dakota. This grazing region, in which, except Texas, but a few years ago there were but few cattle, now has:

	1883.	1882.	Increase.	P. c.
No. cattle.....	9,223,360	8,731,406	491,954	6.0

The gain is not so large proportionally as in the agricultural states west of the Mississippi, but it is great, and it is to be remarked that this country, which, except Texas and a narrow strip along the Pacific coast, but a few years ago produced almost nothing, and seemed never likely to yield traffic enough to support a railroad, now has about one-third of all the beef cattle in the United States. A decrease of 4 per cent. is reported in California and 5 per cent in Idaho, but there are very large increases in others, as 18 per cent. in Colorado, 18 in Arizona, 8 in Montana, 20 in New Mexico, and 35 in Wyoming.

As by far the larger part of the shipments of this territory is afforded by its flocks and herds, we give for each state and territory the numbers of cattle and sheep reported Jan. 1:

	Cattle.	Sheep.
Texas.....	4,410,000	7,877,500
Indian Ter.....	510,000	55,000
New Mexico.....	375,000	3,960,000
Colorado.....	698,000	1,512,000
Wyoming.....	780,000	520,000
Montana.....	590,000	405,000
Idaho.....	195,000	125,000
Utah.....	103,000	513,000
Nevada.....	212,367	367,000
Arizona.....	145,000	602,000
California.....	575,000	5,907,980
Oregon.....	615,000	2,403,457
Washington.....	117,300	390,000
Total.....	9,223,360	24,337,637

This is nearly one-third of the cattle and about one-half of the sheep in the United States, and this helps to explain how so many railroads in the Far West have been able to get a living, some of them a very good living too.

Texas, it will be seen, has nearly one-half of all this grazing country, though it has not one-fifth of the area, and about half of it is agricultural and forest land, and not grazing country. It is an old grazing country; it has had great flocks and herds for something like 40 years, and there is probably a much smaller propor-

tion of waste land in it than in the other grazing territory, otherwise we might look upon it as an example of what that might become in time. The Indian Territory, which is commonly regarded as affording no traffic, has nearly five times as many cattle as Massachusetts, more than Virginia and more even than Kentucky. The great cattle-grazing territory, it will be seen, is that this side of the Rocky Mountains, in which are about four-fifths of these 9,200,000 cattle.

One may be misled by these data concerning cattle unless he studies at the same time the statistics for milch cows. The fact is that east of the ranch country substantially all the breeding cattle are also milch cows, while further west but a very small fraction of the cows are ever milked. Thus Texas, with 4,410,000 other cattle, has 660,715 milch cows, while New York has 1,491,278 milch cows to 894,991 other cattle. Out of every thousand cattle 130 are milked in Texas, and 623 in New York. Iowa, a great stock-growing state, had 346 milch cows in every thousand cattle. But in Texas more cows are milked than further north and west. Thus the Indian Territory, Colorado, Wyoming and Montana together had 2,576,000 other cattle and but 88,271 milch cows—33 out of a thousand.

In the whole country the increase in the number of milch cows was:

	1883.	1882.	Increase.	P. c.
No. cows.....	10,838,111	10,350,337	487,774	4.7

In only one state in the Union was there a decrease in milch cows, but the great gains were chiefly in a group of states which we give below:

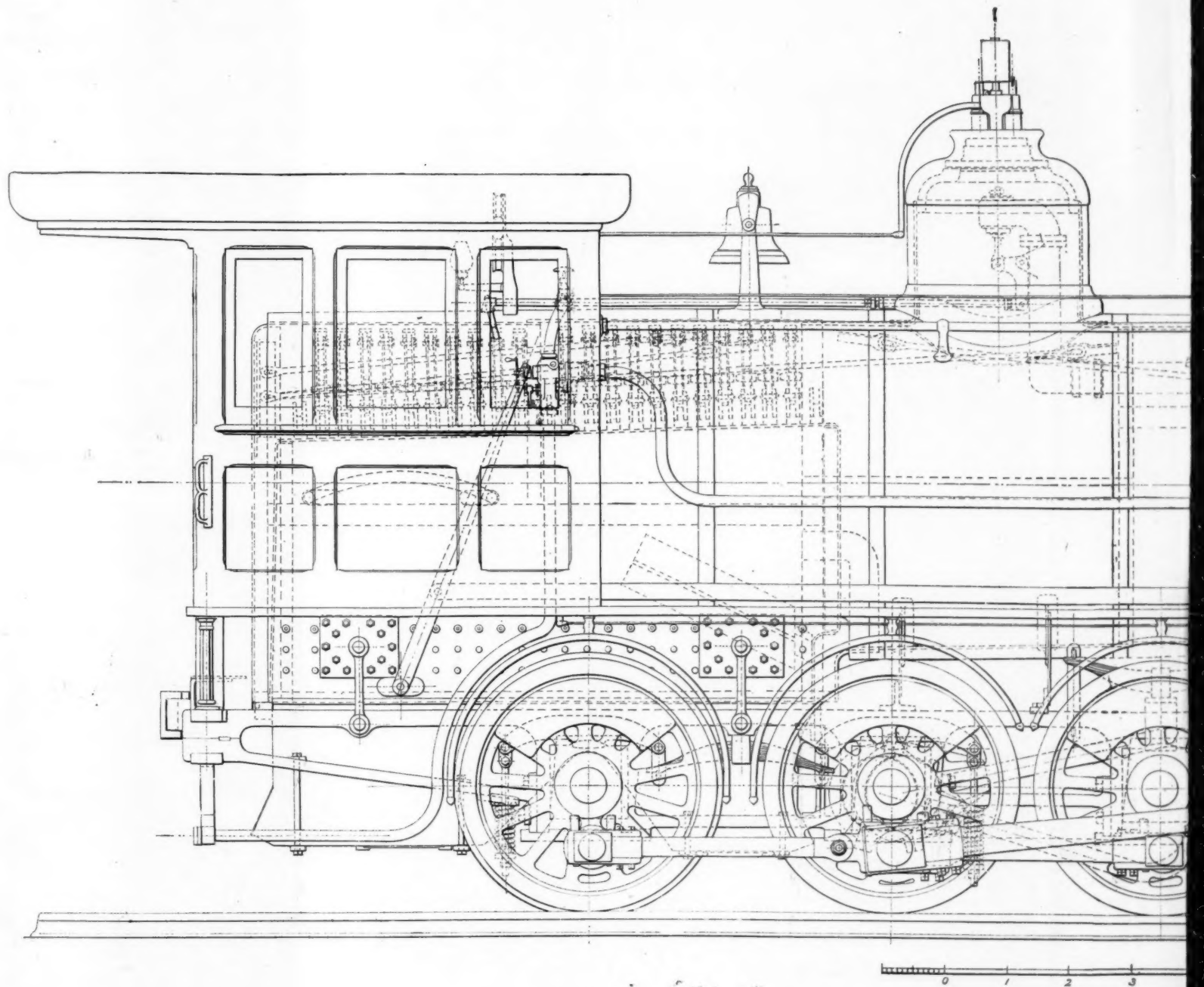
	No. 1883.	Increase.	P. c.
Wisconsin.....	517,217	29,274	6.0
Minnesota.....	321,368	26,532	9.0
Iowa.....	1,019,091	108,653	12.0
Kansas.....	487,901	40,285	9.0
Nebraska.....	226,145	40,815	22.0
Total.....	2,571,722	245,559	10.5

Thus more than half of the increase of the year was in these five States, which have but fairly begun to be prominent as dairy states, though northern Iowa has been for some years largely devoted to dairies, and the state has now more milch cows than any other state except New York. The extension of this industry in these comparatively new states will help to explain why comparatively little progress has been made in grain-growing in any of them except Kansas and Nebraska for a few years.

We subjoin a statement concerning sheep, which, more numerous than any other domestic animal, are of the least value—worth not one-eighth as much as the cows and cattle of the country, and not one-half as much as the hogs, which are next to them in number. We have seen that there was from 1882 to 1883 an increase of 2,619,461 sheep, or 5.6 per cent. Examination shows that 10.6 per cent. of the whole number were in the states east of Ohio, and that there the increase was insignificant; 10.3 per cent. were in the South this side of Texas, and here, too, the increase was almost nothing. In the northeastern Mississippi Valley states, east of the Mississippi, north of the Ohio and west of Pennsylvania, are 22.6 per cent. of the sheep, and here there was an increase of 3.4 per cent. In the six agricultural states west of the Mississippi and north of Arkansas—great grain, cattle and hog states—are but 7 per cent. of the sheep, but they increased 6.8 per cent. last year—probably chiefly in the ranches of Kansas and Nebraska, as about four-fifths of the increase was in those states; but in the country further west, the ranch country, for which we gave the number of sheep and cattle in a table above, were 49.5 per cent. of all the sheep in the country, and here the increase was nearly 9 per cent., in spite of a great decrease in California, which ranks next to Texas in the number of sheep. It is especially significant that 76 per cent. of the whole increase in sheep was in this ranch country, though this is probably exaggerated by the more complete enumeration of the ranch cattle this year. But probably few people realize that the chief seat of the wool-growing industry is now far west of the Mississippi.

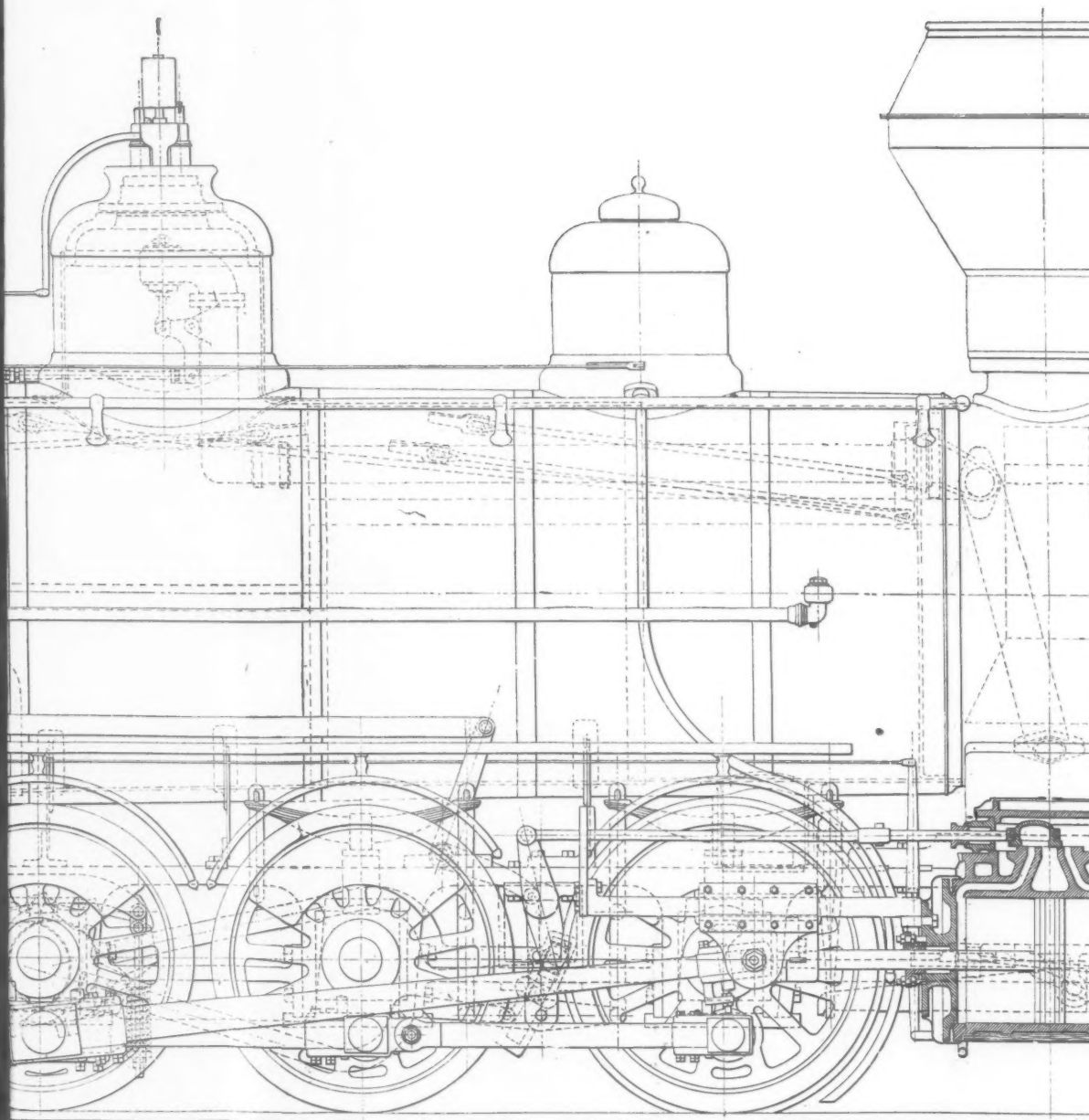
Sheep, it seems, are raised preferably in the warmer district. The four states and territories along our Mexican border have 18,347,000, or three-eighths of the number in the United States.

It appears from this that the arid plains of the Far West, which are for the most part unfit for agriculture, have already been utilized to a very great extent for stock-growing; that already nearly one-half of the sheep and one-third of the beef cattle of the country are there, and that by far the larger part of the growth of beef and wool-growing is in this recently useless country, so that we may expect that a still larger proportion will be there hereafter. The tendency is in this direction because, in the first place, the ranch country is fit for nothing but grazing, and if utilized at all must be utilized for that, while the country further east is available for all agricultural purposes;



CONSOLIDATION FREIGHT LOCOM

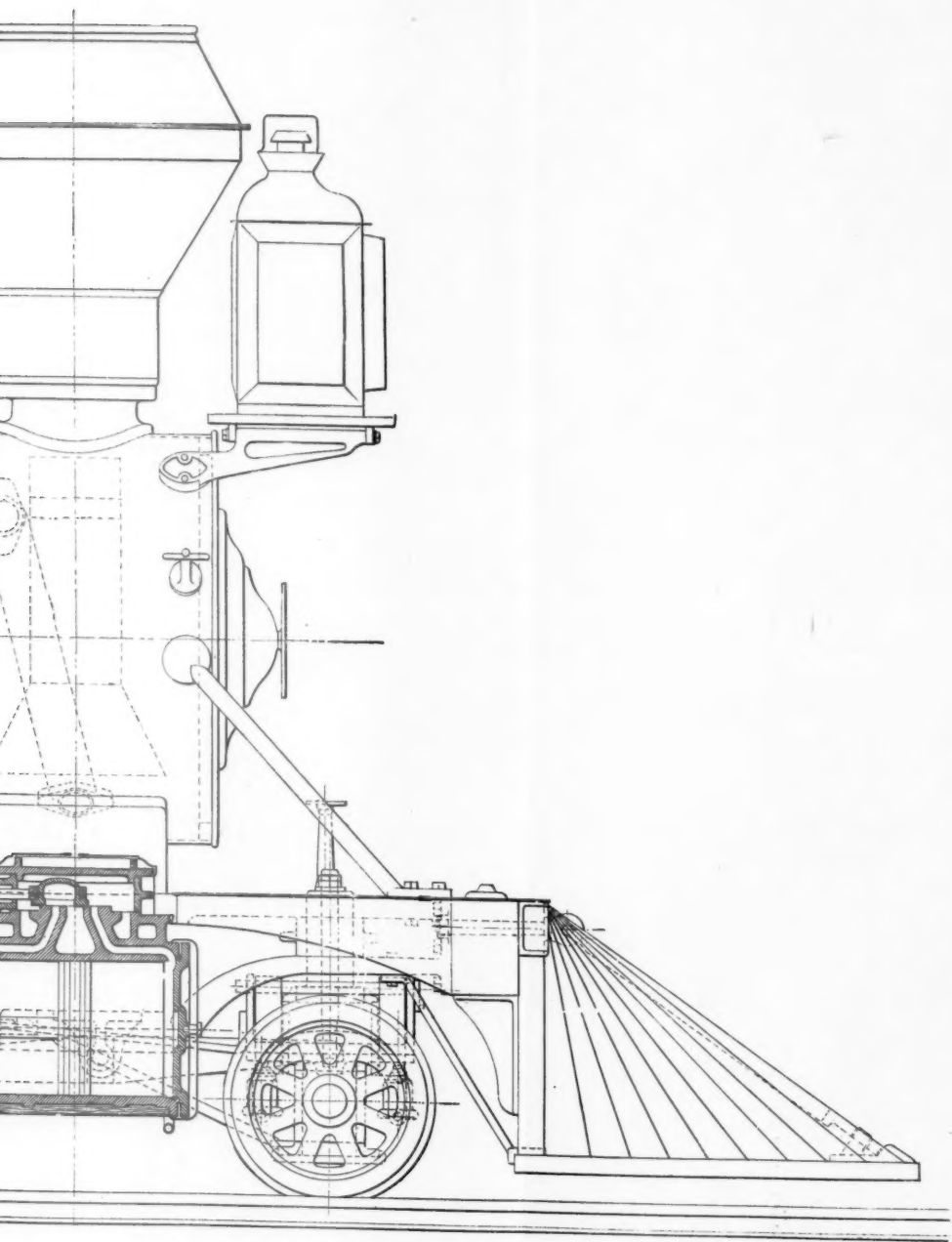
Built by the BALDWIN LO



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CONSOLIDATION FREIGHT LOCOMOTIVE AT THE CHICAGO EXPOSITION.

Built by the BALDWIN LOCOMOTIVE WORKS, Philadelphia.



and in the next place because stock is grown with the minimum of labor on the ranches, as they graze through the winter as well as the summer.

The Art of Sitting.

A novel car seat is used in a composite car which was exhibited on the New York Central last week, and will run on the fast Chicago train. About one half of the car is a baggage compartment, and for the light fast train is sufficient. The other part is fitted up for passengers, and will be the only part, we believe, in which passengers who have not paid for sleeping car accommodations will have seats; that is, the train is composed exclusively of Wagner cars, with the exception of this and the dining car. In it are carried out some suggestions which readers of the *Railroad Gazette* may remember to have read heretofore. One-half of the passenger compartment has revolving chairs and the other half reversible seats of a novel pattern. There is a window to each chair, and of course to each seat. A little wash closet affords the luxury of cleanliness usually unattainable on a train outside of a sleeping car. The seats, however, are the noticeable feature. These are considerably wider than the ordinary car seat, and with backs much higher. The seat is somewhat concave, and slopes backward very decidedly, as does the seat back. The latter is a little concave about at the height of the shoulder blades of a man of moderate height, and so high that the head may be rested on it. The seat is so hung that the turning of the back reverses the inclination, so that it can be reversed as readily as any other seat. How much more comfortable it is than the ordinary seat one can hardly imagine without trying it. The secret of a comfortable seat is that it should distribute the weight of the body over a large surface, instead of causing it to rest on a few points. But there are several things to be borne in mind while providing this large bearing surface. If the back is much inclined, then it is true that more of the weight is thrown on the back, and thus the seat is relieved; but though this position is deliciously restful for one who has been sitting upright for a long time, it is not permanently a comfortable position, as one may know who will lean back in a rocking-chair for two hours at a time. Again, one important exception must be made to distributing the pressure upon the body. The front edge of the seat should press very lightly on the under side of the legs, just back of the knees. If the pressure is considerable then it checks materially the circulation through the great blood vessels that there pass to and from the leg below the knee, causing a most disagreeable numbness, well known to those who for any length of time sit in the peculiar American attitude, tipped up in their chairs. In both these particulars, perhaps the New York Central seats could be modified to advantage; that is, the inclination of the back might be made a little less, and the front edge of the seat a little lower, as it would be if it were adjusted to a less inclination of the back. However, no occupation of a seat for an hour or two will enable one to judge decisively of its comfort. For that an all-day's ride is necessary. And it is the necessity of occupying a seat for hours together which makes the form and proportions of a car seat especially important. Very rarely is a chair in a house occupied for so long a time at once—which perhaps accounts for the fact that most parlor chairs, big, richly-upholstered affairs, are usually decidedly uncomfortable. And it must not be forgotten that the most comfortable of all positions, when maintained for a long time, becomes tiresome. A change to a worse position would be a great relief. It is, however, practically impossible to provide several different kinds of seats in one car, and a single seat which can be varied in inclination, etc., seems not to have been attained.

Nor will a single perfect form and arrangement of seat be practicable. To get a perfect-fitting seat you must be measured for it, as much as for your coat. The height presents a great difficulty. The seat which is comfortable to a man 5 ft. 8 in. high, permitting free circulation back of the knee, may badly cramp the leg below the knee of the woman 5 ft. high, not to speak of children. Again, that concavity in the seat-back which just takes in my shoulder blades may be a little too high for my wife's. But in this as in most accommodations for passengers, we have to aim not at the absolutely perfect, but at the best attainable average, and as very little attention is paid to providing seats to fit different persons in houses, nothing of the kind is expected in passenger cars. A little improvement is welcomed, and these new seats seem to be more than a little one.

On the excursion to Poughkeepsie last week, the seats certainly were received with great favor, and

there is little doubt that they will be almost universally preferred to the ordinary revolving chairs, with which the same car is provided, and which are like the ordinary drawing-room car seat.

We may add that the new seats are spoken of by the New York Central officers as "Forney seats."

Dining by Rail.

The dining-car has again successfully invaded the East, and this time makes its appearance on the New York Central, where it will be attached to the fast train, giving the passenger an opportunity to enjoy a comfortable meal at his leisure instead of the lunch basket upon which hitherto he has regaled himself on leaving Albany. Going west, the car is attached to the train leaving the Grand Central Depot at 8:40 A. M., which is too early for the New Yorker to have breakfasted, especially if he worries about being in time and getting his checks. And if he doesn't worry, she certainly will, and not be able to take anything more than a cup of coffee before starting. The car runs through to Syracuse, which is reached at 3:55 P. M., so that a midday meal may also be taken on the car. Returning, the car is attached to the train leaving Chicago at 4:30 on the Michigan Central, and (we believe) at 3:30 on the Lake Shore. The Michigan Central has for a long time had dining-cars. Taking the dining-car on its way east at Syracuse a little after noon, the passenger can take two more meals at his leisure, and arrive at New York well nourished, and ready for his bath and bed. The new dining-car was exhibited on an excursion last week. It is very handsome and convenient, and a credit to the West Albany shops, where it was built.

The dining-cars have made such progress within the past few years that there can be no doubt that they "meet a long-felt want," as the advertisers say. They seem to be indispensable on many lines where there is considerable competition, and to be very much more popular than the restaurant cars which first gave an opportunity to eat a meal at leisure while traveling by rail. The restaurant cars, in many cases at least, provided excellent food; and doubtless a considerable number of travelers can suit themselves better at their tables than in a dining car, just as every expert diner, if we may use the expression, can suit himself better at a good restaurant than at a good *table d'hôte*. By far the larger number of travelers, however, including nearly all ladies, are ignorant of the art of dining at a restaurant. They are not accustomed to it, and a journey is no time to learn. The carriers must provide, when but one kind of provision is possible, not for the particularly fastidious of their customers, but for the great mass of them. They have to, or should, do this in other things than dining, and are found fault with therefore not un seldom. Now we are so accustomed to discomfort of one kind or another in connection with our meals while traveling by rail, that even a tolerable meal served where it can be taken at leisure is apt to be regarded as something extraordinary. But very good meals are served in some at least of these cars—as good as is ordinarily had at hotels for the same price.

It is the common experience, however, so far as we hear, that the expenses of the dining-car are considerably more than its receipts. The advantage to the railroad is the same that any addition to accommodations gives—handsomer cars, easier seats, better lights (so commonly neglected), polite train and station men, and that great luxury, water, wash-bowl and towels, which have begun to make their appearance in other than sleeping cars. When one line has accustomed travelers to a little additional comfort, the others have to follow or suffer. Those who have fed comfortably in a dining-car on one route are likely to avoid the rival route which only gives you twenty minutes for dinner.

There is, however, one great obstruction to the universality of dining-cars. They make every passenger live at the rate of a first-class hotel while traveling, or else put up with what he can carry with him. It would doubtless not be possible to depend on them altogether, and have no through trains which should make stops for meals. A very large class of travelers—doubtless far the largest part—cannot afford to pay the dollar that is charged on the Pennsylvania and the New York Central or even the 75 cents usually charged in the West for every meal. This is not an objection, not a serious one, at least—on special trains like those on the Eastern roads named, which it is intended to keep small and of a superior class. The cost of the meals is a part of the cost of the journey, and if the passenger cannot afford it he takes another train which will enable him to live at less expense, even though the fare be no less. In the West this

difficulty has been felt, and a way to obviate is desired.

This may be by buffet cars, traveling lunch counters, or by establishing something of the kind in the regular dining-cars. But there are many difficulties in the way. On some routes were such provision made there would be a much smaller number of meals taken in the dining-car, and what is already a bill of expense might become a somewhat burdensome one.

Chicago, Burlington & Quincy Earnings.

Chicago, Burlington & Quincy earnings and expenses in the month of May are reported as follows:

	1888.	1889.	Increase.	P. c.
Gross earnings.....	\$1,888,077	\$1,505,261	\$382,815	25.4
Expenses.....	1,149,223	857,494	291,729	34.0
Net earnings.....	\$738,854	\$647,767	\$91,086	14.1

The very large increase in expenses is notable, but it is due probably to exceptional expenditures for renewals after the winter months, as the increase of expenses for the previous four months of the year had been 10½ per cent., against 34 per cent. in May. The mileage is about 10 per cent. greater this year than last, the Denver Extension not having been opened until July last year.

For eight successive years the gross and net earnings and expenses in May have been:

	Gross earnings.	Expenses.	Net earnings.
1876.....	\$1,049,570	\$558,043	\$491,527
1877.....	917,447	556,615	360,832
1878.....	1,375,516	635,375	740,141
1879.....	1,171,303	658,890	512,413
1880.....	1,909,627	890,172	1,019,455
1881.....	1,679,456	925,753	753,703
1882.....	1,505,261	857,494	647,767
1883.....	1,888,077	1,149,223	738,854

The Burlington & Missouri River in Nebraska was first included in 1880, since which time the increase in mileage has been about 600 miles, or nearly 25 per cent., but it has been in branches and the Denver Extension chiefly, which cannot have added very largely to the profits. And we see that though the comparison with last year is very favorable, that with previous years since the Nebraska system was absorbed is not so at all. Even the gross earnings are less than in 1880, while the net earnings are 27½ per cent. less than then, and a little less than in 1881. Not a great deal of stress should be placed on a single month's net earnings, however, as circumstances often make it desirable to make an exceptionally large expenditure for renewals in some months, and this seems to have been the case last May. On this account the returns for the five months ending with May are much more significant.

For these five months ending with May the earnings and expenses this year and last compare as follows:

	1888.	1889.	Increase.	P. c.
Gross earnings....	\$9,345,493	\$7,718,451	\$1,627,042	21.1
Expenses.....	5,051,535	4,344,061	707,474	16.3
Net earnings.....	\$4,293,958	\$3,374,390	\$919,568	27.2

These are great gains, but perhaps not more than was to be expected. The crops of 1881, which were supplying traffic last year, were probably the worst ever harvested on this road, taking them altogether, and they were especially bad in Nebraska, where it has a thousand miles of road, and where last year all the crops were exceptionally good; this season is not wholly a favorable one, however, because east of the Missouri, and especially in Iowa, the corn crop on its lines was poor last year as well as the year before; but for this the road would, during this month, be carrying enormous quantities of corn to Chicago: it is the greatest corn-carrier in the world.

For eight successive years the earnings and expenses in the five months ending with May have been:

Year.	Miles.	Gross earnings.	Expenses.	Net earnings.
1876.....	1,301	\$4,586,378	\$2,468,227	\$2,118,151
1877.....	1,343	4,565,902	2,773,960	1,791,942
1878.....	1,620	5,520,700	3,609,879	1,910,821
1879.....	1,709	5,349,271	3,017,340	2,331,931
1880.....	2,597	7,076,640	3,813,441	3,263,199
1881.....	2,692	7,014,745	3,977,816	3,036,929
1882.....	2,960	7,718,451	4,344,061	3,374,390
1883.....	3,216	9,345,493	5,051,535	4,293,958

This shows much more favorably than the returns for May. The gross and net earnings are rather larger this year than ever before, though the gain in net earnings over 1880 is but 3½ per cent., and by no means in proportion to the increase of 27½ per cent. in mileage, or the increase of 28 per cent. in capital stock (requiring \$1,232,000 more profits yearly to pay the 8 per cent. dividends), or the smaller increase in the funded debt, which has been partly by the substitution of 4s and 5s for 7s and 8s. It should be remembered, however, that in 1880 the road earned an enormous surplus after paying its dividend—about \$2,700,000, which would pay nearly 4 per cent. on the present capital stock.

The absence of the Chicago, Burlington & Quincy from our usual tables (because ordinarily it reports too late for them) makes a very considerable difference, especially in the aggregates of the Northwestern roads. All the great lines out of Chicago to the West report except this and the Rock Island, which occupy the largest part of the southwestern quadrant, from the Chicago-Council Bluffs line of the Northwestern on the north to the Wabash on the south—a country south of the spring wheat district east of the Missouri and mostly north of the winter wheat district, but abounding above all others, perhaps, in corn, oats, hogs and cattle; while the roads in question carry probably the larger part of the Nebraska spring wheat (mostly produced on the Burlington's lines) and a large part of the Kansas and much of the Missouri winter wheat. Their traffic is enough unlike that of the roads further north, like the Northwestern, and those further south and east, like the Chicago & Alton, that it is not safe to judge their returns

by those of the other Chicago roads. For instance, in May the Chicago & Alton gained 12½ per cent., the Wabash ½ per cent., the Northwestern ½ per cent., the Milwaukee & St. Paul 25 per cent., while the Chicago, Burlington & Quincy gained 25½ per cent.; considering its increase of mileage, it apparently fared more like the Chicago & Alton than like its nearer neighbor on the north.

For the five months ending with May its gain of 21 per cent. in gross earnings may be compared with gains of 26 per cent. by the Hannibal & St. Joseph, 10½ by the Chicago & Alton and 28½ by the Missouri Pacific—all south of it—and of ½ per cent. by the Northwestern, and 15½ by the Milwaukee & St. Paul, north of it.

The Burlington, however, differs from all these lines by its vast stay in Nebraska, south of the Platte, and its line to Denver, which has the Union Pacific for a near neighbor, while the Denver line is wholly new. The Union Pacific, we know, has earned less this year than last, though its numerous lines in Nebraska and Kansas must have earned much more. The falling off, therefore, was probably on the far Western and through traffic, and this should have made the traffic light on the Burlington's Denver Extension.

The group of 11 Northwestern railroads for which we reported May earnings last week with an increase of 17 per cent. in mileage to 14,470 miles, gained \$588,678 (9½ per cent.) in earnings. With an increase of 10 per cent. in length, to 3,216 miles, the Chicago, Burlington & Quincy alone gained \$382,515, or 25½ per cent. Compared with the group of 11 Southwestern roads, it also shows better results, these having gained 18 per cent. in earnings, with an increase of 12½ per cent. in mileage. No other Western road that has reported did as well, except the Missouri Pacific, though the Chicago, Milwaukee & St. Paul was not far behind.

Erie Earnings and Expenses.

The earnings and expenses of the New York, Lake Erie & Western Railroad are reported as follows for the month of April:

	1883.	1882.	Inc. or Dec.	P. c.
Gross earnings.....	\$1,548,474	\$1,670,743	D. \$122,269	7.3
Expenses.....	1,078,503	1,001,725	I. 77,778	7.8
Net earnings.....	\$469,971	\$669,018	D. \$200,447	30.0

This is an unfavorable showing, the more so as earnings were not heavy at this time last year. It is not only that there is a considerable decrease of gross earnings, but there is also an increase in expenses, so that the net earnings have fallen off by 30 per cent., amounting to more than \$200,000, which is more than two-thirds of the increase that was made in the previous six months of the fiscal year. The increase in expenses was to be expected, as we have explained before, but not the decrease in gross earnings. Last year at this season the east-bound through freight was the lightest for years, and the west-bound was carried at less than half the present rates, and was wholly unprofitable. This makes it probable that the falling off is in local freight or coal, and it may be partly due to the competition of the new Lackawanna road to Buffalo, which is close alongside of the Erie for about 200 miles, and naturally must take from it some of the local traffic.

The gross earnings in April were \$148,500 less than in March this year, while last year they were \$103,000 greater; but there is nothing particularly significant in this. The expenses were also \$110,000 less than in March, and with the exception of February, were the smallest for five months. The net earnings were but \$38,000 less than in March, and were larger than in any other month since November.

For the six years since the organization the earnings and expenses of the road in April have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1878.....	\$1,127,079	\$891,755	\$235,324
1879.....	1,372,755	964,455	408,300
1880.....	1,643,151	962,827	680,323
1881.....	1,709,057	1,117,089	591,968
1882.....	1,670,743	1,001,725	669,018
1883.....	1,548,474	1,078,503	469,971

Thus we see that the gross earnings in April were less this year than in any other since 1879; that the working expenses, though more than last year, were less than in 1881, and that the net earnings, like the gross, were the smallest since 1879. If we compare with the course of earnings and expenses on the Pennsylvania Railroad for the same months, we find that it gained 5.3 per cent. in gross earnings over last year, while the Erie lost 7½ per cent.; and that in net earnings the Erie lost 30 per cent., while the Pennsylvania gained 11½ per cent.

For the seven months of the company's fiscal year ending with April the Erie's earnings and expenses were:

	82-83.	1881-82.	Inc. or Dec.	P. c.
Gross earnings.....	\$11,383,165	\$10,963,673	I. \$419,492	3.9
Expenses.....	8,026,528	7,700,841	I. 325,687	4.2
Net earnings.....	\$3,356,637	\$3,262,832	I. \$93,805	2.9

These changes are all very small. The increase in net earnings is especially so, amounting to about \$1.10 per share of the preferred stock, and to about 12 cents per share of the common stock.

For the six years since the reorganization the gross and net earnings and expenses in the first seven months of the fiscal year ending with April have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1877-78.....	\$9,271,136	\$6,370,018	\$2,901,118
1878-79.....	9,144,777	6,422,952	2,721,825
1879-80.....	10,464,185	6,725,142	3,739,043
1880-81.....	11,949,557	7,752,839	4,196,718
1881-82.....	10,963,673	7,700,841	3,262,832
1882-83.....	11,383,165	8,026,528	3,356,637

Thus the gross earnings, though this year \$419,500 more than last, were \$466,000 less than in 1880; they were \$819,000

(8 per cent.) more than in 1880, and \$2,233,000 (24½ per cent.) more than in 1879.

The working expenses have been larger this year than in any other—\$274,000 more than in 1881, \$1,301,000 more than in 1880, and \$1,604,000 more than in 1879. This has caused the net earnings to be comparatively stationary. They were this year \$94,000 more than last, but less than in any other year since 1879, and \$740,000 (18 per cent.) less than in 1881.

For the remainder of the fiscal year (five months, June to September inclusive) the gross and net earnings of the Erie have been:

	1879.	1880.	1881.	1882.
Gross earn.....	\$8,797,246	\$8,223,623	\$8,866,048	\$9,012,101
Expenses.....	4,751,747	4,918,783	5,503,391	5,387,252
Net earn.....	\$2,045,499	\$3,304,840	\$3,362,657	\$3,624,849

Thus for the remaining months of its fiscal year the Erie has the most favorable period in its history to compare with, the gross and net earnings in these five months being larger last year than ever before, while the working expenses were a little less than in 1880. It would hardly be expected that the gain in these five months should be at as great a rate as in the previous seven months, when the comparison was with a period of reduced earnings and profits. Circumstances yet unknown, such as the crops and the condition of the coal and iron business, may make a very considerable difference in the results of these five months, however.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Buckhannon & Weston.—Completed from Weston, W. Va., east by south to Buckhannon, 15 miles. Gauge, 3 ft.

Chicago, St. Paul, Minneapolis & Omaha.—The *Bayfield Branch* is extended from Cable, Wis., north by east to Vandewater, 51 miles.

Pittsburgh, Wheeling & Kentucky.—Extended from Wheeling, W. Va., to Riverside, 3½ miles.

This is a total of 69½ miles of new railroad, making 1,900 miles thus far this year, against 3,965 miles reported at the corresponding time in 1882, 1,872 miles in 1881, 1,768 miles in 1880, 732 miles in 1879, 482 miles in 1878, 595 miles in 1877, 656 miles in 1876, 396 miles in 1875, 603 miles in 1874, and 1,387 miles in 1873.

NORTHWESTERN GRAIN RECEIPTS, which we noticed as having fallen off remarkably in May, but said would be likely to revive by the middle of June, when the farmers had got through planting, began to revive the first week in June, and have since been much greater than in May, yet have been small for June. For the four weeks ending May 26 the receipts of the eight Northwestern markets averaged 3,475,000 bushels; per week; but for the week to June 2 they were 4,787,670, and for the following week 5,880,199 bushels. These compare very finely with last year, but not with several previous years, the receipts having been:

Week to	1883.	1882.	1881.	1880.	1879.
June 2.....	4,787,670	3,843,742	8,085,234	8,168,171	6,524,578
June 9.....	5,880,199	3,110,851	7,320,207	5,754,274	4,773,299

For these two weeks the receipts were 3,714,000 bushels (54 per cent.) more than last year, but 4,737,000 (31 per cent.) less than in 1881, and less also than in 1880 and 1879.

The approximate report telegraphed from Chicago for the week to June 16 makes the receipts there 3,715,000, against 3,547,000 the week before, and very much less in previous weeks; and here the comparison with years previous to last year is favorable, as will be seen below:

Week to	1883.	1882.	1881.	1880.
June 2.....	2,834,889	2,256,341	4,181,967	4,093,703
" 9.....	3,546,953	1,730,411	3,970,537	3,071,884
" 16.....	3,715,000	1,939,282	3,680,890	2,796,005

It is not at Chicago so much as at St. Louis, Peoria and Toledo that the receipts are much less this year than in 1881 and 1880. Thus for the two weeks to June 9 the receipts at these places were:

Year.	Chicago.	Toledo.	St. Louis.	Peoria.	Last three.
1883.....	6,381,822	689,015	1,348,934	651,150	2,689,099
1882.....	3,986,752	656,552	938,640	503,810	2,099,002
1881.....	8,152,504	1,523,296	2,584,649	1,337,240	5,445,185
1880.....	7,165,587	1,286,922	1,401,128	1,040,075	3,568,125

Chicago receipts this year are not a fourth less than in 1881, and but about a tenth less than in 1880; but at the other three places the decrease is one-half from 1881 and one-fourth from 1880. The percentages of the total Northwestern receipts arriving at Chicago and at the other three places named have been:

	1883.	1882.	1881.	1880.
Chicago.....	59.8	57.4	53.0	55.5
Toledo, Peoria and St. Louis.....	25.2	30.2	35.4	27.6

Thus an exceptionally large proportion of the grain has been arriving at Chicago recently this year. This would be easily enough intelligible if the receipts now were chiefly or very largely spring wheat, but they are not; not one-tenth of them are either spring or winter wheat, but they are chiefly corn and oats. If the difference between rail and water rates were greater than usual, we might expect that the grain would go to the nearest lake ports, and chiefly to Chicago and Milwaukee, to be shipped; but the rail rates are as low this year as in any other at this time, possibly excepting 1881.

(It was just after this time that the railroad war broke out.) Moreover, the rail shipments are not now an unusually small proportion of the whole. The crops were not worse, but better in the country nearest Peoria and St. Louis than further north, and unless speculation has made prices higher in Chicago than elsewhere, it is hard to see why it should be getting an unusually large part of the grain.

THE CHICAGO PASSENGER MEETING, at which Assistant Commissioner S. F. Pierson presided, was successful in accomplishing or making a promising beginning on nearly all the work that was laid out for it. The principal thing actually adopted was the pooling by the roads east of St. Louis, Chicago, and a line between the two places (not including the Wabash as far west as the Mississippi) of their earnings from passengers interchanged with their western connections to and from Missouri River points. This has been one of the most difficult matters to manage in the passenger combination. The Western roads have their eastern termini at independent centres of travel, such as do not exist between Chicago and the seaboard, and these roads form a peculiarly complicated system, whose interests are apt to conflict for reasons that do not apply to the lines further east; which yet, as things have been managed, had to suffer more or less in conflicts in which they did not wish to participate, and had little or no interest. By the co-operation of the lines east of Chicago and St. Louis, it will be comparatively a matter of indifference to them what troubles the lines further west may have. They will insist on their full rates, and if a conflict among their Western connections brings an undue proportion of the passengers by way of Chicago or St. Louis for a time, it will make no difference with their passenger earnings, though it may empty or crowd their passenger trains.

This, however, is but one step toward completing a combination among the lines which have united for this purpose. It is proposed to make a series of combinations or pools for the various competitive routes, or the more important ones among them, on the shorter lines in this vast system of railroads north of the Ohio. It is not enough to provide by differences in rates or otherwise for travel between New York and Chicago, New York and St. Louis, etc.; there is also more or less contention, and sometimes a great deal, on such routes as between Pittsburgh and Cleveland, Buffalo and Detroit, Cleveland and Columbus, Cincinnati and Chicago, etc. These contests have some effect on the travel over the long routes in which a large number of the roads participate, but even when this is unimportant, and there are but few lines affected, and these are short ones, the contest may be important for them. To settle upon the routes which needed to be provided for by co-operative action, to decide upon the particular provision to be made in each case, and to secure the adoption and execution of such provision, is the by no means light task which remains for Mr. Pierson and the Passenger Department of the Joint Executive Committee. But a good beginning has been made on so firm a basis, and with such unity, that there is good reason to expect that the further steps will be taken safely and without much delay. The sub-pools proposed at the meeting were:

Between Pittsburgh and Boston.	Boston, New York, Baltimore and Washington.
Between Cleveland and	Washington.
Between Columbus and	Boston, New York, Philadelphia, Baltimore and Washington.
Between Detroit and	Albany, Boston, New York, Philadelphia, Baltimore and Washington.
Between Dayton and	Albany, Boston, New York, Philadelphia, Baltimore and Washington.
Between Indianapolis and Albany and Boston,	

and some of these it was agreed to make. The prospect is very good that there will be a decided improvement in the maintenance of passenger rates, taking the lines from the Mississippi to the Eastern seaboard, even over the greatly improved condition of the last year.

THE BREADSTUFFS EXPORTS IN MAY were extraordinarily light this year, as the following statement (in which flour has been reduced to bushels), compiled from the reports of the Bureau of Statistics, will show:

Year.	Flour.	Wheat.	Corn.	Total.
1883.....	2,661,993	2,972,397	6,332,156	11,966,546
1882.....	1,923,813	5,296,836	1,235,555	8,456,204
1881.....	2,897,614	10,229,644	7,257,244	19,906,889
1880.....	2,420,001	8,734,723	9,973,122	21,605,459
1879.....	2,249,230	8,622,601	11,290,659	22,162,490
1878.....	1,530,378	7,525,813	11,416,016	20,472,207
1877.....	919,674	1,257,187	8,039,736	10,216,597
1876.....	1,573,123	4,909,200	7,132,340	13,614,663

The wheat exports therefore were smaller in May than they have been before since 1877, and 40 per cent. less than last year, when we were marketing the last remains of a crop of 880,000,000 bushels, while now we have the residue of a crop of 504,000,000. The chief cause is, doubtless, that last year there was a stringent demand for wheat abroad, and that we had the promise of an exceptionally large crop, which was almost sure to result in lower prices after harvest. This year, though we have a large surplus, Europe is well supplied, and will not pay well for more wheat, while the prospect here is for a much smaller crop than last year, and holders are willing to keep their wheat rather than sell at the prices Europe is offering, as they feel that the result of the harvest is more likely to put up than put down the price.

The corn exports, though five times as great as last year, when we had hardly enough for home needs, was nevertheless smaller than in any previous year since 1875; and the total flour, wheat and corn exports, though 3,510,000 bushels (40 per cent.) more than last year, were little more than half as great as in any of the four years from 1878 to 1881, but 1,750,000 (17½ per cent.) more than in 1877, which was a season after a very poor crop, and 10 per cent. less than in 1876, even.

THE TRAIN ACCOMMODATIONS of the Master Car-Builders from the Atlantic states, on their recent trip to and from the convention at Chicago, were such as might be selected for the criticism of connoisseurs. Westward, the Baltimore & Ohio Railroad Company placed two sleeping cars at their disposal, leaving Jersey City on the 9th, via Philadelphia and Washington for Chicago. The cars were well filled by the car-builders and their wives, who formed a lively party, under charge of Mr. L. Packard, Master Car-Builders of the Baltimore & Ohio Company. Returning from Chicago on the 15th, the Pullman Car Company placed at their disposal two new sleepers, the "Newburg" and "West Point," built for service on the New York, West Shore & Buffalo road. These cars are probably as near perfection as the art of car-building has thus far reached. They are finished in mahogany throughout; have a buffet with facilities for supplying passengers with a cold lunch, tea and coffee; electric call-bells from each section to the porter's quarters, while the distribution of spaces in the aisles, passage and sections has been a matter of careful study and successful designing. They carried an appreciative load over the Pennsylvania route to New York, and administered a lesson in car construction to men able to profit by it. The party eastward was in charge of Mr. Cloud—the Pennsylvania Railroad's "representative member" of the Association—who adapted himself happily to his duties as host and conductor, expressing the hope that he might ultimately become a sleeping-car porter and get rich.

CHICAGO THROUGH RAIL SHIPMENTS EASTWARD for the week ending June 17 for four successive years have been:

	1880.	1881.	1882.	1883.
Tons.....	42,504	37,600	28,514	29,299

Thus the shipments of the week this year were 3 per cent. more than last year, but 21.8 per cent. less than in 1881 and 30.8 per cent. less than in 1880.

Of the shipments this year 14.5 per cent. was carried by the Chicago & Grand Trunk, 17.7 by the Michigan Central, 21.9 by the Lake Shore, 26 by the Fort Wayne, 12.6 by the Chicago, St. Louis & Pittsburgh, and 7.3 by the Baltimore & Ohio. Thus the two Vanderbilt roads carried 39.6 per cent. of the whole, instead of the 45.5 to which they are entitled, and the two Pennsylvania roads 38.6 per cent. instead of 35.5.

For seven successive weeks the Chicago shipments have been in tons:

	Apr. 30.	May 7.	May 14.	May 21.	May 28.	June 4.	June 11.
	35,525	40,482	36,270	26,677	25,954	26,093	29,399

Thus the shipments for the second week of June were the largest since the second week of May. A further increase may be expected, as the Chicago receipts are now quite large.

For the week ending June 16, the imperfect reports of eastward, through and local shipments of flour, grain and provisions from Chicago makes the total this year 25,102 tons, against 18,350 in the corresponding week of last year, and 23,142 tons in the previous week of this year. This week, it will be seen, varies but two days from the week reported above, for which the total shipments under the pool are given. The former includes 1,193 tons carried by the Nickel-Plate road, which is not in the pool, and yet it reports 4,297 tons less than the pool shipments.

THE PROBABLE COMPETITION WITH THE MEXICAN RAILWAY was referred to at the recent half-yearly meeting by Mr. Crawford, the Chairman of the company. The lines which he mentioned as projected from the Gulf to the city of Mexico were the Tampico line of the Mexican Central and the "National Inter-oceanic," which is, we suppose, what we have called the Mexican National's Vera Cruz project. Mr. Crawford says that the National Inter-oceanic was formed by the consolidation of eight small companies with the sanction of the Mexican Congress, to form a route from Vera Cruz via Mexico to the Pacific at Acapulco, 650 miles, and has obtained a contract for a subsidy from Congress. The Mexican Railway Company, however, Mr. Crawford says, has a contract with Mexico, by which that country agreed not to grant a subsidy for any new line between Vera Cruz and Mexico. But Mr. Crawford thinks that this company, or any company which purposes to compete with the Mexican Railway Company, can not get capital in England. Even if their roads were built, he says that they probably would not do very much harm, because they too will have to make a great ascent from the sea, will be costly, and will need high rates to pay expenses and interest on cost. Our information is, however, that the proposed line from Mexico via Puebla and Jalapa to Vera Cruz will not be costly, and can be cheaply worked, and whether it is or not, the division of the traffic would be a serious matter to the Mexican Railway, though Mr. Crawford says he does "not care a button for the prospective competition."

RAIL IMPORTS continue small, though the exports from Great Britain to this country in May were a little larger than in previous months of this year. But for the five months ending with May these exports this year were sufficient only for 305½ miles of track laid with 56 lbs. rails, against 1,143 miles last year, 1,433 in 1881, and 1,042 miles in 1880. If we go back to 1879, we find the exports for the first half of the year were only enough for 88 miles of such track; they began to increase directly afterward, however, and in the last half of that year were enough for 419 miles.

EDITORIAL CORRESPONDENCE.

Notes on the Chicago Railroad Exhibition.

Fairbanks, Morse & Co., of Chicago, who occupy a space 36 by 40 feet, exhibit a 40-ton railroad track scale with iron frame 34 ft. long; a 6-ton depot scale, a 2,500 drop lever scale, a 3,500 dormant scale, a 20-ft. railroad "Eclipse" wind mill on a 40 ft. tower, and a 51,000 gallon tank; also a full line of windmill pumps, double-acting and single-acting, and a full line of railroad steam pumps. The steam pumps are of eight sizes, the largest one having a 18½ in. steam cylinder, 18 in. stroke and 12 in. water cylinder; capacity 1,000 gallons a minute. This firm also exhibit a Hancock inspirator, and the D. K. Miller railroad padlocks. They have also a Sheffield patent hand car with somewhat peculiar wheels. The hub is composed of two wrought-iron plates bolted together. The centre of the wheel is made of pieces of wood placed radially to the tire and hub, similar to the Mansell wheel, which is used extensively in Europe. Spaces are cut out between the pieces, so that it resembles a spoke wheel. On the outside is a steel tire, which is fastened on with a double flange and screwed to the wooden centre. One of the wheels on one of the axles is loose, so as to facilitate lifting and turning the car from the track. It is worked with a horizontal lever in the usual manner. The lever is geared up at a somewhat higher speed than ordinary hand cars. The weight of the car is 500 lbs.

A push-car made by the same company, a narrow-gauge hand-car, an assortment of baggage barrows, copying presses and switch stands are also shown by the same firm.

Besides these articles they exhibit a spring-testing machine, which consists of a cross-head so arranged as to have a vertical movement. It is moved by power, the pressure on it being weighed by a scale beam below. The cross-head is arranged with a large screw, so that it can be adjusted to bring any desired pressure on the scale beam. By means of a screw the pressure and the stroke upon the spring can be adjusted to any desired amount, and any number of impressions can be given to the spring by the geared machinery. They also exhibit one of Fairbanks' large testing machines for testing the strength of metals and other materials. This machine is arranged so that the strains are taken on a set of scale beams, and an automatic registering apparatus is attached by which a diagram is produced representing accurately the strains, the elongation and the breaking point of the specimen. The capacity of this machine is 80,000 lbs. The Witty switch stand, which is also shown by this firm, consists of a cast-iron stand, so arranged that it can be bolted or spiked to two cross ties instead of one, thus giving greater stability to the stand than is ordinarily secured. Targets of various forms are used, and of course any kind of target can be applied with a lamp on top of the stand.

J. T. Ellacott, of Chicago, exhibits specimens of the Stow flexible shafting and special tools for boring, drilling, reaming and tapping. This appliance is very well known and is intended to be used for transmitting power in any direction from a given point.

The Chicago Raw-Hide Manufacturing Company exhibits a great variety of leather lace and raw-hide belting and raw-hide rope to be used in the transmission of power in the same way as belting. The leather is prepared by processes which are patented, and may be described briefly by saying that the hair is removed from the hides by sweating and not by liming, as in ordinary tanning. The hide is then treated with alum, salt and flour, with a few other ingredients, after which it is "pulled" with a preparation of oil and tallow. It is claimed for this that a larger proportion of the strength of the hide is retained in the leather, and that it has much greater flexibility and durability, for work such as belting must do, than leather tanned in the ordinary way.

Henry R. Worthington, of New York, exhibits an extensive assortment of steam pumps and one water meter. He shows one compound steam pump specially adapted for pumping dirty or muddy water, 6, 10 and 16 by 7 and 10; one compound steam pump, 14 and 20 x 12 and 15 for small water works; one mining pump, 16 x 7 x 10 for heavy pressures and gritty and sulphurous water, which is lined with Ajax metal throughout; one fire pump, 14 x 7 x 10; one low-service pump, 7½ x 6 x 10; two for boiler feed for general service, one 6 x 4 x 6, one 4½ x 2½ x 4; one pump and boiler for railroad tank service, size of tank 5½ x 6; one 1-inch water meter. The 14 x 12, the mining pump and the water meter are in operation.

F. C. Wells, of Chicago, exhibits two steam pumps of his latest construction, and a portable boiler for use in working the pumps for railroad tank stations. Only an engraving could give a clear idea of the construction of these pumps.

The Cleveland Steam Gauge Company exhibits various forms and patterns of the Watson portable forge. As we expect to illustrate these, we will not attempt any description until illustrations are published.

Wardell & Hinkley, of Chicago, exhibit a Reynolds improved Corliss engine manufactured by E. P. Allis & Co., of Milwaukee, Wis. The engine is 18 by 42-in. cylinder, with valve gear similar to the ordinary Corliss gear, excepting that the dash-pot is so arranged that a partial vacuum is produced underneath the piston, so that the valve is closed more quickly by the pressure of the atmosphere on the top. There is also some improvement in the form of the hook by which the steam valve is opened. The workmanship appears to be of the very best kind, and the engine is very creditable to the manufacturers.

M. B. Edson, of New York, exhibits one of his time and

pressure recording and alarm gauges. This is a well-known instrument and has heretofore been described in the *Railroad Gazette*. It is intended to show a continuous record of the steam pressure in the boiler, and act as a tell-tale on the parties in charge of the engine and boiler.

The Ramapo Wheel & Foundry Co., of Ramapo, N. Y., exhibits specimens of its cast-iron chilled wheels, 42, 33 and 30 in. plate wheels, also specimens of 30 and 26 in. spoke wheels for locomotives; smaller sizes of wheels for narrow-gauge and hand cars; also steel-tired wheels with cast-iron centres, which have been patented by Mr. Snow. This wheel has a steel tire. The hub is cast iron with wrought iron plates bolted on each side. We hope at some future time to give an illustration of this from which a clearer idea of its construction may be formed. The cast-iron wheels are beautiful specimens of castings and a credit to the makers.

Greenlee Brothers & Co., of Chicago, exhibit what they call a hollow-chisel car mortising machine, which in ordinary language might be described as an auger which bores a square hole. It is, in fact, a mortising machine in which there is a square hollow chisel, in the inside of which an auger is made to revolve very rapidly. The auger cuts a round hole in the ordinary manner, and the chisel cuts away the square corners and forces the chips into the auger, which acts as a conveyor for them, in discharging them through openings at the side and back of the chisel. The chisel works horizontally, and the auger is driven by a belt and pulley. The chisel and bit are carried in a cross-head running in guides and drawn in by friction. This cross-head is carried in by a friction feed. Suitable stops are arranged, so that the depth of the hole of the mortise can be gouged, and also stops for the height and for the length.

The same parties exhibit Greenlee's self-feeding rip-saw table. It has an attachment for feeding the lumber in on to the saw. This feeding arrangement consists of a revolving disk, with teeth similar to saw teeth. This is on the same line as the saw, so that the indentations made on the lumber are cut out by the saw. No pressure is required to force the lumber against the saw, but it is carried through by the action of the feed. The feed is driven from the saw arbor and can be regulated at different speeds by coned pulleys for different qualities of lumber. The same parties also exhibit a sash machine.

The Morden Frog and Crossing Works, of Chicago, exhibit a variety of frogs, crossings, switches and switch stands; also Morden's U-plate frog and crossing, Morden's solid cast-steel point frog, Morden's patent tie bar, Morden's patent guard-rail fastener, Miner's stub-switch attachment, wrought and cast-iron switch chairs, the Clark & Bessler three-throw switch, and railroad supplies in general. The Morden U-plate frog consists of steel rails which are joined together by U-plates placed between the frog points and the wing rails. These are bolted with bolts passing through the flanges of the U-plates, which gives a much more secure attachment with less liability of breaking the bolts than where they pass entirely through the frog. No bottom plate is required with this arrangement.

He also exhibits Morden's patent solid cast-steel frog point. In this the U-plates are cast on to the solid point, and are bolted to the wing rails the same as in the frogs made entirely of rails. The same principle of the U-plate is applied, but in this case the plate is made of an L-section, and has only one flange, which bolts to the guard rail. The flat portion of the plate passes under the main rail with a lip turned on the outside which engages with the flange of the main rail, thus preventing the guard rail from spreading or tilting.

A double-track crossing for the Chicago & Atlantic Railroad is also exhibited, and a peculiar, triangular crossing frog for three tracks for the Lake Shore road.

This exhibit also contains specimens of Morden's patent tie bar for switches. It is difficult to describe this without an illustration, but it consists of a peculiar claw-shaped steel casting, attached to each end of the tie bar, which engages with the lower flange of the rail and is fastened without bolts or rivets. If one of them is broken it is easily replaced by a duplicate. No work is required in fitting these up; the rough casting is simply attached to the tie bar and the rail.

There are also on exhibition a variety of wrought and cast-iron switch-chains, ground switches and ground switch stands. Among the switch-stands is one made of cast-steel with a roller placed midway in the bottom of the chain, which facilitates the movement of the rail as moves on top of the roller, and when in position with weight on it locks the rail in its place.

Mr. Morden also exhibits specimens of Miner's attachment for stub-switches, which consists of a rail bolted to the outside of the switch-rail, so that when the switch is thrown to the main track the wheel has a bearing on this outside rail, thus preventing the breaking down of the ends of the main and switch-rail.

Clark & Bessler's three-throw switch, mentioned above, consists of a split switch of the ordinary pattern, with a double set of points, one of them set ten feet behind the other.

This exhibit also contains an illustration of the need of uniformity in the matter of switch targets. Ten different switch stands are exhibited, not one of which has a target like another. These are intended for different roads. The shapes are all unlike, but it may be presumed that the parties who have designed them would be willing to suffer torture before they would consent to the adoption of anything different.

Jones & Laughlins, of Chicago and Pittsburgh, exhibit all sizes of cold-rolled shafting, from ¼ in. to 4½ in., and

samples of their special shapes of all kinds in cold-rolled iron, also couplings, hangers, pulleys, pillow blocks, post hangers, collars, loose collars and set screws, chains, railroad coupling links and pins, samples of all the splice bars in use by the various Eastern roads, boiler rivets, machine bolts, light iron rails (8 lbs. per yard to 40 lbs. per yard), street-rail sections and railroad spikes. Besides the ordinary couplings fastened together with bolts, this firm manufactures the Collins patent self-adjusting double compression coupling. It would be difficult to describe this without an illustration, and all that can be said is that it consists of a sleeve divided longitudinally through the centre, which is held on the shaft by a key, the two halves of the sleeve being confined by a collar in the centre, and by nuts, which screw on the two ends.

Cold-rolled iron, besides being used for shafting, is now manufactured for various other purposes, such as keys for couplings and pulleys, and piston rods for the Westinghouse brake air pump, and also for steam pumps, and in fact for all special purposes where great accuracy in the size of section and strength are required.

This firm makes a specialty of the manufacture of bolts and nuts, coupling pins and links, boiler rivets, light rails, bolt ends, bridge rods, etc.

Bowler & Co., of Cleveland, O., exhibit an assortment of cast-iron chilled wheels, including double-plate Washburn wheels and hollow spoke wheels, and a cast-iron frog. It is impossible to form any idea of the quality of these wheels from their external appearance. All that can be said is that they look well on the outside, and are good specimens of such work.

The Watertown Steam Engine Company has on exhibition specimens of its steam pumps. These differ from ordinary steam pumps from the fact of the cylinder standing vertically. It exhibits three sizes, Nos. 1, 2 and 3.

The Roger Iron Works, of Muskegon, Mich., exhibit three different sizes of steam pumps of the ordinary horizontal pattern.

Nye & Palmer, of Chicago, exhibit the Nye pump, which is described as follows in their trade circular:

The machine consists merely of two cast-iron cylinders (lined with wood to prevent loss of steam by contact with the metallic surfaces). The condenser (a plain chamber back of cylinders), a simple, balanced automatic steam valve (seen on the top of cylinders), and four common check valves, covering suction and delivery ports. The whole is supported on a raised base, occupying very little space, and is quickly and easily put up.

When the pump is set in motion, and the ordinary connections of steam, suction and discharge pipes have been made, the condenser is to be filled with water, and the pump is now ready to start. Steam is then admitted to one of the cylinders for an instant, displacing the air, and is then turned off. This steam is immediately condensed by a spray or jet of water passing into the bottom of the cylinder by means of a passage from the condenser, thereby forming a vacuum which allows the atmosphere to force water through the suction pipe, filling the cylinder from below. The effect of the vacuum has also been conveyed at the same instant by a port from the steam passage to one end of the sensitively balanced steam valve, causing it to move gently toward the vacuum, shutting the steam ports to that cylinder, and opening those to the other. Steam is again turned on, and entering the second water cylinder, the same operation is repeated as in the first, the vacuum is formed, the valve shifts, and the cylinder is filled. We have now two cylinders of water, and the steam ports to the first cylinder are open. Steam is now finally turned on, and the globe valve regulated for the amount of steam necessary to do the work.

The steam enters the cylinder, and acting directly upon the water forces it out through the discharge pipe, a small quantity at the same time enters by a passage in base of pump into the condenser, compressing the air at top of water and forming an air cushion. At the instant the cylinder is emptied the pressure on the air cushion is relieved (in consequence of an attempt of the steam to follow the water out of the discharge pipe), and the rebounding of the air cushion forces a jet of water back into the cylinder full of steam, condensing it instantly, and forming a nearly perfect vacuum, thus utilizing the steam which is the natural exhaust of all other styles of steam pumps. Thus the vacuum is formed, the cylinders filled, and the steam valve operated at no expense of live steam or loss of power.

The port to the second cylinder now being open the steam discharges the water from that while the first is filling. The action is then repeated on each cylinder alternately. Its automatic movement is so sure and perfect that the pump will run for months with but little attention, pumping the most impure water that is required of any pump to raise.

C. G. Carleton & Co., of Chicago, exhibit leather and rubber belting, rubber and cotton hose.

The Chicago Screw Company has a case of samples of machine screws, studs, etc., which it manufactures.

Specimens of Baker's automatic lubricator are exhibited. It would be impossible to describe this without an illustration. It belongs to the class of oilers having what is known as the sight feed.

The Huyett & Smith Manufacturing Company, of Detroit, has a number of cupola and pressure blowers of its manufacture, also its patent exhaust fans. These machines are described briefly in its circular as follows:

"The wheel is a solid disc from centre to periphery, with buckets on both sides, staggered so that each set of buckets discharges independent of the others, thereby giving an even discharge of air, and entirely avoiding the loss of power which occurs in all other blowers where the inlets are opposite each other with nothing between to separate the air current. These blowers are as near noiseless as any efficient forge blower can be made."

S. A. Smith, of Chicago, exhibits the Standish improved foot-power hammer or "oliver"; also Empire portable forges, Brown & Sharp's tools, and a variety of other railroad and machinists' supplies, also the National chuck and the Alligator wrench.

The Deane Steam Pumping Company, of Holyoke, Mass., has on exhibition a 14, 8½, 10 duplex and a 7, 7, 10 tank pump with boiler. They have also on exhibition a steam pump with the sides cut away, so as to show the internal

arrangement of the valves. In this way the construction of the pump can be shown more satisfactorily than by drawings or by a merely external view of the pump itself or a verbal description. Besides these, they have a No. 3 boiler feed pump, and a No. 5, 4, 7 tank pump.

The Thompson & Nathanson Boring Tool Company, of Milwaukee, exhibits a case of very fine tools, including twist drills of every size and variety, solid reamers, chucked reamers, chisels for mortising machines, machine bits, carbide bits, special nut augers, chuck bits, counter-sink bits and counter-bore bits. These tools are beautifully made, and indicate the rapid growth of manufacturing in the West. A specialty which these manufacturers exhibit is a 3-lip twist drill, which, it is claimed, will do work much more accurately than the ordinary 2-lip drill. The variety and beautiful finish of these tools is very creditable to this company, and its exhibit is well worth the attention of railroad men.

J. A. Clark, of Chicago, exhibits one of what he calls his "perfect sand dryers" for drying sand for use on locomotives. It consists of a cone-shaped hopper, with a stove in the centre. The bottom of the hopper has a number of holes, through which the sand falls as it becomes dry.

The Raw-Hide Manufacturing Company, of Boston, exhibits specimens of chairs and car seats. The seats of these are similar to ordinary car seats, but are made of raw-hide. In preparing the hide all the fatty substances are removed, and it is then cut into strips by placing the hide on a revolving table, a suitable knife being placed at the circumference. The knife is then fed inward, in that way cutting a continuous strip from the hide. After being cut into strips it is woven as ordinary cane seats are. It is claimed that it can be left much more open in car seats than is possible with either rattan or cane. It is stained different colors and has a very neat and cleanly appearance.

Robert Kent, of Brooklyn, N. Y., exhibits one of his patent punching and shearing machines with Jenkins' combined punch and reamer attached. This is shown in operation, and makes a hole as smooth as though it were reamed out. The peculiarity consists in the lower end of the punch being made smaller, and a shoulder being made above it, so that the main portion of the core of the hole is taken out by the small end of the punch and the shoulder reams what is left and leaves the hole with a smooth surface without injuring the fibre of the metal or bending the plate.

Harry Hunter, of Chicago, exhibits a combined wheel turning and grinding machine. This machine is intended both for grinding cast-iron chilled wheels and for turning and trueing up steel-tired wheels. A pair of emery wheels is attached on each end and on opposite sides of a pair of car wheels, so that two emery grinders can be used on each wheel at the same time. One pair of these wheels is attached to tool posts and can be removed and a turning tool substituted, while at the same time the emery wheels on the opposite side are used to assist in grinding the surface of the steel-tired wheel. These emery grinders are used for trueing up the portion of the steel tire which has been worn out most and which has been left with a hard surface that cannot readily be touched with a turning tool. If, therefore, the tires are trueed with a turning tool alone it is necessary to take off considerably more than is needed to true them in order to get below the hard scale, but by using an emery wheel for this purpose only enough is taken off at the lowest portion of the tire to make it true and the remaining portion is then cut away with the turning tool. This results in a great saving in the tire, and prevents the waste of material which occurs when the tires are trueed up by turning alone. Another improvement in this machine is the attachment of a hydraulic jack for handling the wheels and axles. This jack is placed in the centre of the machine, and the wheels are then rolled in over it, so that the jack comes immediately under the centre of the axle. Both centres of the machine are movable, and when they are withdrawn the wheels and axles can be raised up to the proper positions by the jack and the centres brought to bear on the axle and thus hold it in this position. By these means an axle and pair of wheels can be placed in position in about a minute and a half, with very little labor to the men in handling.

Mr. A. A. Bissell, of Joliet, Ill., exhibits a revolving light for caboose cars. It is operated by a wormed gear on the axle of the caboose and a vertical shaft connected with a lamp on top of the cupola of the caboose car. This lamp has four lights, two of them red and two white, so that it acts in the same way as a flash light on a lighthouse, indicating by the revolution whether the train is moving or standing, and by the direction of the revolution whether it is backing. The speed with which the lamp revolves also shows the speed at which the train is moving.

Halladay, Litchfield & Co., of Chicago, exhibit Halladay's patent triumph automatic saw-sharpener. It is intended to sharpen circular saws by means of an emery wheel and an automatic apparatus by which the saw is fed from one tooth to the other and the position of the emery wheel is adjusted. This machine keeps the saw teeth sharpened up and the saw "combed" and "jointed." After the saw is placed in the machine and properly set, no further attention is required, as it works entirely automatically. No attention is required except to feed the saw down closer to the emery wheel. It is claimed for this machine that by its use a saw can be kept in better condition, with the teeth truer, than in any other way. The saw is also kept in perfect balance.

W. T. Reaser, of Chicago, exhibits one of his patent balance valves. This consists of a cap on top of the valve which is supported on four rockers at each corner of the cap and bearing on the top surface of the valve-seat. The

lower ends of the rockers have gearing attached to them, which engages in a similar gearing in the valve-seat, so as to prevent them from shifting their position. One of these valves is fitted up inside of a steam-chest, with steam-pipe connected, so that pressure can be put on it and it can be operated by a lever on the outside. It is said that no sensible difference can be observed in the working of this valve with steam on or without.

W. H. Stevens, of Paterson, N. J., exhibits the Van Dusen patent steam jet pump, which is intended to be attached to locomotives to be used in case of fire. This was illustrated in the *Railroad Gazette* of Oct. 27, 1882, to which readers are referred for a full description and illustration.

The Tanite Company, of Stroudsburg, Pa., exhibits a locomotive slide-bar grinding machine, and a car-box grinder. The former is intended for trueing up locomotive slide bars with an emery wheel, and the latter for grinding car journal bearings. As we expect to illustrate these machines, we will omit a complete description at the present time.

H. W. Caldwell exhibits samples of Caldwell's patent hollow shaft wrought-iron conveyers. These consist of iron plates wound spirally round tubes which form shafts for the conveyers. They are used for conveying grain and other materials. He also exhibits a mixer for mixing concrete, mortar, etc., used in masonry work. It consists of one of the spiral conveyers with projecting arms attached to the shaft, the whole revolving in a trough into which the mortar or concrete is placed. The revolution of the shaft, and of the arms thoroughly mixes the mortar, and the spiral form of the conveyer carries it from one end and delivers it to the other.

The Northampton Emery Wheel Company, of Leeds, Mass., exhibits an assortment of emery wheels and emery wheel grinding machines.

M. Covell, of Chicago, has an automatic saw sharpener and automatic power saw swage, for sharpening circular saws with an emery wheel and swaging the ends of the teeth. It is not possible to describe this machine without an illustration. All that can be said is that it works automatically, and is set to keep the saw in thoroughly good condition.

Walter J. Ford, of Concord, Tenn., formerly of the Westinghouse Brake Company, exhibits an improvement of the Westinghouse automatic air brake.

The Farquhar-Oldham Filter Company, of New York, exhibits one of its filters in operation. The main difficulty in carrying on any continuous process of filtration arises from the fact that in all mechanical filters, whether by canvas, disks, bags, cloth or sand, or other granular beds, the impure liquid is pressed against a porous material, the surface of which must be sufficiently fine to arrest the solid impurities, and allow only the pure liquid to pass away. These substances accumulate on the surface, which soon becomes so impervious that the liquid is prevented from passing through it to the filtering material.

To obviate this difficulty is the object of the filter exhibited by the company named. It consists of a cylindrical vessel with a bed of filtering material at the bottom, which rests on canvas, supported on a suitable grating. On top of the filter-bed is a revolving disk, whose axis is vertical. It is operated by a revolving shaft, which passes through the cover of the cylindrical vessel. The liquid to be filtered is admitted through the hollow shaft and underneath the revolving disc. It can then pass through the filter-bed, and is then carried off by a pipe, which communicates with the space underneath the grating. To prevent the surface of the filter bed from becoming coated with the impurities left behind, the revolving disc has an inclined knife or cutter, something like a plane bit, attached to it, which scrapes off the impurities on top of the filter-bed and carries them into the space above the disc. By this means the surface of the filter-bed is always kept clear. The disc has suitable gearing, by which it is fed downward slowly, so as gradually to scrape off the impurities and the clogged surface of the filtering material.

The Link Belt Machinery Company, of Chicago, exhibits a barrel and sack elevator and a link belt elevator, also a freight conveyer for handling freight of any description. These are all operated by a system of endless chains.

Fisher & Norris, of Trenton, N. J., exhibit an assortment of their anvils and vises.

Manning, Maxwell & Moore, of New York, exhibit one of the Detroit patent tube-welding machines. Without an engraving it will be impossible to describe this machine so that its construction will be understood.

The Delaware Iron Works, of New York, have on exhibition an assortment of direct-acting steam pumps of their manufacture, the Delamater duplex pump, Ericsson's hot-air pumping engines of 6, 8 and 12-inch cylinder, and an improved Rider compression hot-air pumping engine used for railroad tanks and elevators.

The Ottumwa Iron Works, of Ottumwa, Iowa, exhibit two of Johnson's automatic screw machines, intended for making small machine screws.

John M. Poage, of Cincinnati, exhibits an automatic water column. This is arranged so as to turn on rollers somewhat similar to the rollers used for shutting an ordinary gate, so that it can be swung around over the tender, where it will stand of itself, and can then readily be pushed back and swung into its position by its own weight. It is also supplied with a valve, which is partly balanced, and is so arranged that no shock can be brought upon the water pipes inclosing it. We expect to publish illustrations of this structure in an early number, and therefore will not attempt a full description of it now. It has also on exhibition a tank valve for railroad water tanks, with the necessary

fixtures and spout for conducting the water to the tender. This we also expect to illustrate, and will then be able to make their construction more clear to our readers.

F. W. Richardson, of Troy, N. Y., exhibits a model of link and valve motion. It is intended to test the working of any given form and proportions of valve gearing. It is made so that every part is adjustable, and is therefore capable of reproducing a valve gear of any dimensions. The frame is made of cast iron. The throw of the eccentrics is adjustable and also the length of the eccentric rods, the radius of the link, the length of the suspension and lifting arm—in fact, all the parts can be adjusted to any required dimensions. Persons at all accustomed to designing valve gearing will know the value of such an instrument in any machine shop where locomotives are built and repaired.

The Ashton Valve Company, of Boston, exhibits an assortment of its patent safety valves and water relief valves. As these have been fully illustrated in the *Railroad Gazette*, no description of them is needed here.

Contributions.

Train Rules.

VII.

INSTRUCTIONS TO CONDUCTORS.

(Continued.)

We continue these rules from the point where they were broken short last week.

60. In switching you must never allow a car to be moved unless a brakeman is in a position to control its speed and to stop it with safety.

61. When cars are pushed, or are moved without an engine, you must see that, while near a passenger station, or while passing close to a car containing passengers, or when approaching or crossing a street, they do not move faster than at the rate of . . . miles per hour, and that a man is in a position to warn persons off the track.

62. You must carry a good watch and know each working day that it is right, according to the standard time as shown by the clock at You must never regulate your watch by that of the engineman who runs with you, as he is expected to use his especially as a check on any defect in yours or error in using it.

63. In any matter involving the safety of a train or obstruction of track, or where an error in time would be liable to be dangerous, the time must be observed from at least two time-pieces; you must never depend upon one watch or clock alone.

64. When beginning a trip, and when passing from one division of the road to another, you must learn from the proper authority what trains (if any) that are liable to affect your right to the track are due. You must not assume that all trains which ought to have arrived have arrived.

As regards this rule, each branch shall be considered as a separate division.

65. In running a train you must always be guided by these rules unless the time-tables or a special order directs otherwise; and such special order must be written or printed, signed by the Division Superintendent or higher authority, and in your possession.

66. You must keep your train to the track designated for it in the time-table, not obstructing any other track except in station yards; and there you must not do it except in accordance with Rule 26.

67. Ten minutes before the time for the arrival of any train of a class higher than yours, you must clear the track on which it is to travel.

68. You must not follow any train within five minutes unless authorized by the time-table to do so.

69. You must not follow any train carrying passengers within ten minutes unless authorized by the time-table to do so.

70. You must always govern yourself when outside of station yards as if you expected to be followed from each station in five minutes by a train running as fast as yours and not bound to look out for yours.

71. Trains of the first and second classes have the right to enter station yards (except at certain stations, as noted in the time-table) without reducing speed, and you must govern yourself accordingly. When such a train is due, precisely the same care must be taken in station yards as on the open road to send out warning of any obstruction of track.

72. You must see that the speed of your train is brought under control before reaching a station where a passenger train is likely to be met, except where both trains go through without stopping.

73. When there is an engine pushing your train, you must see that the rate of speed does not exceed 15 miles an hour.

74. When running a train of the third or fifth class you must be guided by Rule 33 as to speed, unless otherwise ordered.

75. When running a train of the third, fourth or fifth class, you must see that before entering any station yard, and at all times when running within the limits of a yard, the speed is under complete control.

76. You must take particular notice of the front of all trains you see, and note all red or green signals carried by them.

77. When you carry a red or green signal you must, on arrival at the station where it is to be taken off, see that the station agent exhibits the proper signal to stop and notify all trains interested until the arrival of the train for which you carried the signal.

78 (a). When your rear brakeman has been back and placed torpedoes on the rail according to the rule, you may, when ready to go on, call him in, provided—

First, that there is a clear view from your train of at least three miles in one direction, and half a mile in the other direction; and

Second, that no first or second class train is due.

(b) When you know that the train next behind you is one that runs no faster than 15 miles an hour the view (as above) may be one mile instead of three miles.

(c) When you are stopped where there is a clear view half a mile back of you and to a station yard ahead of you, you may call in the brakeman (after he has placed the torpedoes), provided no first or second-class train is due; but in that case you must see that the station agent exhibits the proper signal to stop any train that may follow you too closely.

(d) When within the limits of a station yard, you may call in the brakeman at any time when no first or second-class train is due.

(e) Except as provided in this rule, you must never

call him in until your train is clear of the main track; but—

(f) When you can and do move your train forward fast enough to keep half a mile ahead of the brakeman, you may signal him to follow, being careful not to let him come within half a mile of you. Then, when your train gets within a station yard, you may, if no first or second-class train is due, call him in.

(g) You must never rely wholly on torpedoes for protection, and never rely on them at all when more than a mile away from them.

(h) This rule is intended to keep trains at least five minutes apart, and to secure safety, but does not relieve you from obeying Rule 67.

79. Whenever you turn a switch off from the main track you must know personally that it is set back at the proper time.

80. Whenever any obstruction or defect of the track is known to you, you must, to the extent of your power, do whatever may be required to secure the safety of trains, even though it may not be strictly within your province to do so.

Rule 61 is one which I have not found particularized in any code, but in view of the fact that pedestrians at stations, and both pedestrians and teams at crossings, depend upon a bell in the daytime and on both a bell and a headlight at night to give them warning of approaching danger, it is certainly no more than fair for the railroad company when running cars without either of these safeguards to provide something in their place.

Rule 64 ought perhaps to be on the time-table instead of in the general code, as it would need modification if used on some extensive systems where there are "sub-branches" and "side-feeders" to the sub-branches, and such like complications; but even in the form given here it would on many, perhaps most, roads be a good substitute for the unwritten requirements which the conductors have now to keep track of.

As previously intimated, a good place to say which track a train shall travel on is in the time-table, and Rule 66 has been modified from the usual "always use the right-hand track where the double track is in use" so as to fit any road.

Rules 70 and 71 as written here allow what many would doubtless regard as a dangerous liberty, in the permission to relax vigilance when inside a yard and no regular passenger train is due; but the writer is strongly inclined to believe that a stringent rule requiring switch-train conductors and everybody connected with station work to act at all times as though they expected to be pounced upon by a lightning express at any moment tends, in practice, more to infractions of the rule than to obedience. This is particularly the case where freight trains are at the same time ordered in a sort of general way to look out for danger at stations. After long immunity from accident each party comes to depend on the other's vigilance, and so encroaches on his right. So long as local freight trains and switching engines must work on the main track at way stations, it would seem as though there ought to be at least a portion of the time in which the work can be done with some feeling of security. The matter is rendered still more uncertain in many cases by the fact that freight trains are ordered to be on their guard when approaching stations, while engines returning home without trains, snow-plows, pay cars, etc., are omitted from the rule, and so left in an uncertain position. Perhaps the pay-car ought not to be mentioned here, as on most roads the employes have to wait so long for its appearance that they have ample time to clear the way for it! Where two persons meet on a country road in winter, and, from excess of politeness, both turn out into the snow and leave the whole of the trodden portion of the road vacant, they do more harm than good; the same thing in railroading. Where a freight train half an hour late approaches a station very cautiously to avoid a switching engine, and then finds that the latter has cleared the track forty minutes before, it is certainly making things safe enough if not slightly overdoing the matter. If all trains (except regular passenger) are to approach stations with care, let the stationmen take advantage of the fact and economize their time. This rule, too, is a reasonable one, for, even on the most tortuous of mountain roads, there are very few stations that are not so situated as to afford a view extensive enough to admit of a freight train being brought under control without reducing the speed more than 50 per cent., while at a large percentage of all stations a train can be run through at ten miles an hour and yet be kept under control. The chief objection to this rule, that much time would be wasted by unnecessary slackening when no obstruction existed, is thus greatly mitigated, if not wholly answered. And where the obscure stations are supplied with the cheap and simple device of a tall mast and signal ball, which answers quite well in clear weather, the objection is certainly set aside. The instinct to be more careful when a passenger train is due than when only something of a lower grade is expected is so widespread that it is not likely to be easily eradicated, and as long as this difference does exist, why not make it a distinct and well-defined difference?

Rules 72, 73, 74 and 75 are, of course, addressed first and chiefly to enginemen, and where a reliable power brake is used they ought perhaps to be omitted from the conductor's page. As the great majority of roads are at present run, perhaps the best arrangement would be to insert them as above, and make exceptions for such trains as could be trusted wholly to the engineman.

Rule 76 is on some roads supplemented by an order for the bearer of a flag to call attention to it; but as such a provision seems to be a direct invitation to men to be careless about looking for signals, I have omitted it. The rule seems particularly absurd where the enginemen must use the whistle to draw attention to the ornamental decorations of his cow-catcher. The nervous people living along the line must

be inclined to pray that extras may be extremely infrequent, especially on summer nights, when open windows magnify the sound about tenfold.

Rule 77 is useful chiefly, of course, on single track, but as a flag, as indicated, is a useful safeguard for the protection of yard engines on both double and single track, I have placed the rule here.

For inflexible application at all times and under all circumstances the only safe rule about calling in brakemen from the rear is, without doubt, in the language of Josh Billings, "Don't!" and any modification of this must be made with extreme caution. Rule 78 as here written is made on the principle, quite widely adopted in codes and very widely adopted in practice (when it is known that the Superintendent is not near) of keeping the men with the train as much as possible. This, of course, should be done when it is safe to do so, as otherwise a force of a dozen or more brakemen would be needed on many trains. The rule is perhaps open to the objection of being too complicated, but it cannot be made safe otherwise without trusting entirely to the trainmen's discretion, or else leaving out all of it except paragraph d. Even as it is, it requires to be fortified by a strict regulation in regard to the speed that irregular trains shall be allowed to make, especially on curves and other obscure places. Torpedoes that could be depended upon as a positive safeguard would, of course, admit of a more liberal rule.

Foreign Railroad Notes.

We published some time ago the report by a government inspector of an investigation of the railroad accident near Hugstten in Germany, last September, by which 64 persons were killed and 225 injured. This inspector found reason to suspect that the train, which was an immense excursion train of 26 passenger cars, hauled by a freight engine, was running too fast for an engine of the kind, and that the engineman neglected to moderate its speed, and that the brakemen did not call his attention to the dangerous swinging motion of the cars, and were not all on hand at the brakes, as he found that the train ran further after leaving the rails than he thought possible if brakes were on.

On account of this report the engineman, fireman, conductor, two ticket collectors and a brakeman were charged with criminal negligence and tried before the Grand Ducal Court at Freiburg. April 13 last it announced its decision, reviewing the evidence at some length, and acquitted all the accused. The Court first reviewed the evidence as to excessive speed, and found it altogether inadequate. It consisted mostly of the impression of passengers and persons along the road; but it was dark, and there was a rain storm at the time, and the Court properly laid little weight on these impressions, which were contrary to the impressions of others whose evidence was given, some of whom were railroad men well qualified to judge. Experiments were made with the locomotive after the accident to ascertain at what speed a dangerous swinging motion would be developed, and by the evidence of some it was safe to run it at about the speed at which it was supposed to be running when it left the track. It was shown that railroad employes and others had felt an unusual motion of trains at this place before; that near the place a rail had broken in 1879 and another, which threw a train off the track, the spring after the accident in question. One railroad officer thought that a piece of rail bent S-shaped, which was found under the wrecked engine, may have been broken out by a preceding train; carpenters who passed over the road the day after the accident found several rotten ties; and though the Court did not ascribe the accident to any of these causes, it found that it could be explained without imputing negligence to the accused trainmen.

THE SCRAP HEAP.

Locomotive Building.

At the annual meeting of the New York Locomotive Works in Rome, N. Y., last week, the following directors were chosen: W. M. Burr, Edward Comstock, Ralph N. Ellis, W. B. Isham, H. M. Lawton, T. G. Nock, H. A. V. Post, T. H. Stryker, W. W. Wardwell. It was voted to increase the capital by issuing \$150,000 preferred stock and \$100,000 mortgage bonds.

The Pittsburgh Locomotive Works in Allegheny, Pa., are busy on orders for the Pittsburgh, McKeesport & Youngstown and the Pennsylvania Railroad.

The Grant Locomotive Works in Paterson, N. J., are now filling the order for 40 consolidated engines for the Pennsylvania Railroad, and 15 have been delivered.

Car Notes.

The Jones Manufacturing Co., in Schenectady, N. Y., has just delivered to the New York Central & Hudson River road 15 of the most elegant passenger coaches that company has ever owned. They are finished inside in solid mahogany, richly carved and chased; the raised panels and moldings are polished, while the wood work not in relief is rubbed to dead or egg-shell finish. The seats and backs are upholstered in the finest light crimson plush. The trucks are the company's new standard passenger truck, with 42-in. Page steel wheels and French's springs. Business at the Jones Works is very brisk, and many of the departments are running over-time. They are well supplied with orders, including 14 coaches for the Memphis & Vicksburg, 6 coaches for the Fall Brook Coal Co.'s new through line, 4 for the Marquette, Houghton & Ontonagon, 12 for the Chicago, St. Paul, Minneapolis & Omaha, and smaller orders from different companies. They are also doing considerable work for the Wagner Sleeping Car Co., on sleeping and palace cars.

The Pullman Car Works at Pullman, Ill., are now filling an order for passenger cars for the New York, Lake Erie & Western road. The cars last delivered are to be used on the fast trains between New York and Chicago.

The Marshall Car & Foundry Co. in Marshall, Tex., is building a number of gondolas for the Texas & Pacific road. A wheel foundry, 75 by 115 ft. in size, is to be added to the shops.

Bridge Notes.

Wilkins, Post & Co. in Atlanta, Ga., have taken a contract to build a bridge over the Flint River at Albany, Ga., for the Brunswick & Western road.

The Indianapolis Bridge Co. in Indianapolis, Ind., has taken contracts for the highway bridges over Blue River at Knightstown, Ind., and over Whitewater River at Waterloo, Ind., to replace bridges recently blown down.

Iron Notes.

The Thomas Iron Co. at Hokendauqua, Pa., has five furnaces in blast. Another one was blown out for repairs last week.

The Bethlehem Iron Co., at Bethlehem, Pa., has seven furnaces in blast. Another has been repaired and will be started up soon.

The Pennsylvania Steel Co. in the week ending June 9, turned out 3,350 tons of steel ingots and 2,674 tons of steel rails. Two additional blast furnaces are in progress.

The Jackson Iron Co. will rebuild its furnace at Fayette, Mich., which was recently burned down.

The furnaces of the Crown Point Iron Co. in Essex Co., N. Y., have gone out of blast.

The Ontario Rolling Mill in Hamilton, Ont., is filling a large order for angle fish-plates for the Canadian Pacific Railroad.

Work has been resumed at the Rogers forges in Clinton County, N. Y., a strike of the workmen having been settled by a compromise.

Rosena Furnace in New Castle, Pa., is filling a large order for Bessemer pig iron.

Crozer Furnace in Roanoke, Va., has contracted with the Southwest Virginia Improvement Co. for 90,000 tons of coke.

Manufacturing Notes.

The sales agency of the Eames vacuum brake, heretofore conducted by Thomas Prosser & Son at No. 15 Gold street, New York, has been discontinued. Orders, inquiries, etc., must hereafter be addressed to the Eames Vacuum Brake Co., Watertown, N. Y. Bills sent heretofore from the New York office must be paid at that office.

I. P. Morris & Co. in Philadelphia are building two large vertical blast engines for the Crane Iron Co. at Catasauqua, Pa. They will be ready in a short time.

The Yale & Towne Manufacturing Co., in Stamford, Conn., recently received 22 patents, of which 20 were issued on application of L. A. Emery, for improvements in scales, gauge and testing machines. This is said to be the largest number of patents ever issued to one party at one time.

The Rail Market.

Steel Rails.—The Iron Age says: "The market has been singularly uniform for several weeks past, and there is but little of interest to report. For early summer the mills have about all the business they can handle, so that prices are held with great firmness. A few orders are being entered for late summer at about \$38, with a considerable demand at \$37 to \$37.50. These figures would probably be accepted for winter, but it is difficult to place orders at less than \$38 for anything deliverable this side of November. Light rails are in very active demand, and are quoted all the way from \$40 to \$43 at mill, according to section."

Rail Fastenings.—Spikes are steady at \$2.60 per 100 lbs. in Pittsburgh. Track bolts are quoted at \$3.25 per 100 lbs. for square heads and \$3.35 to \$3.40 for hexagon heads. Splice-bars, 2 to 2.10 cents per pound.

Old Rails.—Old iron rails are dull, but some small sales of foreign tees are reported at \$21.50 to \$22.50 per ton in Philadelphia.

British Rail Exports.

For the month of May and the five months then ending, the exports of steel and iron rails from Great Britain to the United States and to all countries are reported as follows to the Board of Trade, in tons of 2,240 lbs.:

the Board of Trade, in tons of 2,240 lbs.:						
To the United States:	May.			Five months.		
	1881.	1882.	1883.	1881.	1882.	1883.
Iron rails.....	17,206	2,140	130	54,469	20,567	2,299
Steel rails.....	22,638	9,517	7,522	71,664	80,011	24,375
Total.....	39,844	11,657	7,652	126,133	100,578	26,674

The exports to the United States in May were thus 34 per cent. less than last year and 81 per cent. less than in 1881, but they were nevertheless the largest that have been in any month since last October, though so small as to be insignificant. For the five months the exports of iron rails to this country are but one-ninth of what they were last year and 1-23 of those in 1881. The total exports to the United States were a little more than a quarter of last year's and a fifth of those of 1881.

The exports to other countries than the United States were meanwhile:

	May.			Five months.		
	1881.	1882.	1883.	1881.	1882.	1883.
<i>Other Countries:</i>						
Iron rails.	1,455	3,278	2,162	5,704	10,618	11,080
Steel rails.....	38,363	56,508	59,427	126,196	208,656	288,910
Total.....	39,818	59,786	61,589	131,900	219,274	299,990

Thus while the United States has taken less this year than before, other countries have taken more—for the five months 26½ per cent. more.

This makes the total British exports:

	1881.	May.	1883.	Five months.		
	1881.	1882.	1883.	1881.	1882.	1883.
<i>To All Countries:</i>						
Iron rails.....	18,661	5,418	2,292	60,173	31,485	13,379
Steel rails.....	61,001	66,025	66,949	197,800	288,667	313,485
Total	79,662	71,443	69,241	258,033	320,152	326,864

The increase in exports to other countries in May was not quite enough to balance the decrease to the United States; but for the five months the total exports were 2 per cent. more than last year and 26½ per cent. more than in 1881.

The exports of steel and iron both to the United States in each of the first five months of the year for four successive years, have been:

	Jan.	Feb.	March.	April.	May.
1880.....	15,391	12,770	14,528	20,802	29,273
1881.....	7,371	14,790	25,720	38,402	39,834
1882.....	27,267	23,178	22,265	16,211	11,657
1883.....	6,093	4,096	4,691	4,342	7,652

The amount was larger in May, 1881, than in any other month before or since.

A Lost Train.

A dispatch from Williamsport, Pa., June 20, says: "There was considerable excitement and anxiety here yesterday on account of missing trains on the Jersey Shore, Pine Creek & Buffalo Railroad. The country through which this road runs is the wildest in the state, abounding with cañons and hills of forests and unsettled lands. It was feared that the heavy rain-storms had caused the land to slide and had caused a bad accident. The wires being down, no news could be ascertained until this morning, when word was received that a very large land slide, bringing down hundreds of tons of earth, completely covering the track for several

hundred feet, had occurred at Wolf's Run, about 90 miles north of this city. The mountain where the slide occurred rises to an angle of 50 ft. to 100 ft. The road is cut in the side of the mountain and in constant danger of such occurrences. The passengers and crews of the trains were all safe, and the road was clear enough to get off the passenger train by 10:30 this morning."

Proposed Popular Lectures to Railroad Men.

The Railway Bulletin, published by the Railroad Branch of the Young Men's Christian Association in Chicago, says: "We have long felt the need of a building of our own at Forty-seventh street, in and from which could be carried on a more extensive and profitable work. The building we have in mind is to contain a large lecture room in which will be given practical lectures on topics of special interest to railway men, also entertainments and socials, and on Sundays the Gospel meeting. There will also be one or more rooms for hospital use, where injured men can be brought and cared for until able to get out again. There will be class rooms, where will be given instruction in writing, mechanical drawing and other useful studies; also an amusement room and a library; and last, but not least, a fine reading-room and four new and improved bath-rooms. Will you help us to get this building?"

A building is the least of things that go to make up a school; if the instruction of the right kind is provided, there will be very little difficulty in getting all the room necessary to give it in. The report of this Forty-seventh street reading room for May shows that four evening school classes were held, with an attendance of 92; five Bible classes, with an attendance of 17; 50 books were drawn and 167 baths taken.

Baths for Railroad Men.

The Railroad Branch of the Young Men's Christian Association in Chicago has established a very practical and useful enterprise in connection with its reading room at No. 4,645 State street, near the Rock Island round-house, and at No. 141 Stewart avenue. A card issued by it says: "Whenever you want a bath in clean tubs, with hot and cold water, nice towels, soap and brushes, come to the Railroad Reading Room, No. 4,645 State street. Two dollars will give you the use of baths for 12 months, often as you want to bathe, also the privilege of bath at No. 141 Stewart avenue, and the right to take books from our library, and the libraries at No. 141 Stewart avenue and corner of Canal and Kinzie streets."

Saving a Train.

We recently chronicled the act of a woman who wrecked a train in California, and now a New Hampshire woman has saved one, by removing with her own hands, and just in time, a lot of lumber which she found piled up on the track near Nashua.

Well Equipped.

"Is your railroad well equipped?" I should say it was. Splendidly equipped, sir, splendidly! For instance, there are our first mortgage bonds, and our second mortgage bonds, and our equipment bonds, and our land grant bonds, and our common stock, and our preferred stock, and the biggest floating debt of any road in the country. But that isn't all, sir. We've got the finest lobby that any corporation can show; a perfect daisy, sir. If you know of a road that's better equipped than ours is, name it, sir; name it, if you please.—*Boston Transcript*.

American Rolling Stock for Chili.

El Ferrocarril, of Santiago, Chili, says: "The commission appointed by the government to decide definitely upon the class of rolling stock to be adopted for the state railroad has reported in favor of the North American system with slight modifications. The sums to be expended in the purchase of rolling stock amount to more than a million pesos (\$750,000)."

Big Names.

When it comes to big offices the Second Subdivision of Western Division of the Adams Express Co. takes the prize. It has offices at London, Rome, Bremen, Dublin, Athens, Paris, Jerusalem, Alexandria, Moscow and Strasbourg.—*Express Gazette*.

A Stormy Ride.

One of the most terrific rain storms that has ever been known to fall in this state visited Salisbury and vicinity last Saturday night. So frightful was the downpour that many of the people are inclined to the belief that it was a genuine water spout. Be this as it may, it was no ordinary rain storm. Mingled with the roar of the torrents came the roll of thunder and the crack of lightning, and the course of the turbulent streams, with mill houses and bridges tumbling and rolling down their swollen currents, were lighted here and there by blazing barns. Little streams that in ordinary times could be stepped over by a child were quickly converted into rivers, and ruin was being worked on every hand. The storm appears to have extended for 10 miles around Salisbury and was severest up the line of the Western North Carolina road, where two overturned engines and a buried train bore evidence of its disastrous results.

A party of Charlotte boys were on board one of the trains, and arrived home Sunday afternoon to tell their experience. There were three trains on the road, all bound for Salisbury. The mixed local and freight train was in the lead, a gravel train followed this, and the regular passenger train brought up the rear. While the first train was going through a big cut, 8 miles from Salisbury, a tremendous rock broke loose from the top of the embankment and came down on the track followed by a slide of land, catching and holding the train fast. Finding it impossible to move either backward or forward, Engineer Boyd cut his engine loose, and with the conductor and fireman started on to Salisbury to telegraph back and warn the other two trains.

A track walker was sent ahead of the engine with a lantern, and the engineer was moving slowly. After proceeding about two miles, and while crossing a culvert, the engine began to sink and then suddenly went down into the water below, where it lay bottom up. Engineer Boyd, the fireman and the conductor leaped out at the first warning and escaped unhurt. In the mean time the gravel train was approaching the scene of the first wreck, under charge of Engineer Clark. Torpedoes had been planted on the track, and warned by these, the engineer was driving along slowly, and just as he had arrived to within two miles of the scotched train, a culvert gave way under his engine and all went down in the surging torrent. The engineer and all hands escaped unhurt. Some time afterward, Captain Tom Murphy's passenger train came up and stopped behind the gravel train. The rain was coming down in sheets and the scene was wild and frightful in the extreme. There were 15 passengers on the local freight and 10 on the regular passenger train. When daylight came our Charlotte boys got out of the car and took up a pilgrimage to Salisbury, passing the wrecks on their way, and arriving at their destination in time for a late breakfast. All along their tramp they saw evidences of the severity of the storm. In a level field the dirt had been torn up

and the solid red clay exposed for a depth of four feet. All the lowlands were under sheets of shining, rippling water, and the country roads were hollowed out and washed into big gullies.

A construction train was at once sent to the scene of trouble on the railroad, and yesterday morning the damages had been repaired and trains were running.—*Charlotte (N. C.) Journal*, June 12.

Coupling Sticks.

The New York Central & Hudson River Co. has issued a general order to all freight brakemen and yardmen to use coupling sticks, which are furnished them, in making all couplings hereafter. Failure to use these sticks after they are furnished will be a sufficient cause for removal, and such failure must be reported by all agents and yardmen.

The Baltimore & Ohio Relief Association.

A circular issued from the office of the Baltimore & Ohio Employes' Relief Association announces the adoption of an amendment to an article of the constitution, as follows: "Any contributor to the natural death feature, ceasing to be employed by the Baltimore & Ohio or any other railroad company whose employes are entitled to the benefits of this association, shall be permitted to retain all rights to benefits accruing under section 5 of this article, by making monthly contributions to the association of the same amounts as those remaining in the service, and upon like conditions."

Article III., section 1 of the constitution has been amended to read as follows: "There shall be paid to every contributor of the smallest (or first) class, in the case of injury or sickness arising from any other cause than accident occurring in the discharge of duty in the company's service, while totally unable to labor, 50 cents for each working day thus lost, and to contributors of higher classes larger sums proportionate to their contributions; but these payments shall only continue one year after the employe ceases to contribute to the relief fund, and shall not be made in cases of disablement of less than six working days' duration, and then only when certificates satisfactory to the managers have been received from a duly registered medical practitioner, corroborated by the contributor's superintendent or head of department, and likewise by a certificate from one of the Association's medical examiners, that sickness or injury had caused total disability for labor for the time specified in the certificate of said medical practitioner. In case the medical examiner of the Association shall certify that such sickness or injury caused total disability for labor for a shorter period of time than that set forth in the certificate of the medical practitioner, then the payment specified in this connection shall be made only for the time stated in said certificate of such medical examiner."

The circular states that "every member desiring to avail of this privilege must, on leaving the service of the company, return to the Secretary of the Relief Association, Baltimore, his certificate of membership covering benefits in the accident, sick and natural death features, and obtain another covering the natural death feature only. In returning the old certificate of membership the member should state the place of his future residence and the manner in which remittances of dues will be made. Such remittances must be either by postal money order, registered letter, or cash transmitted by express. The premium for the natural death feature is 25 cents for each single rate, payable monthly, quarterly, or annually in advance."

The statement of benefits paid by the Association during the month of May comprise a list of 881 benefits, in amounts ranging from 25 cents to \$1,500. There were four payments of benefits for accidental death, one of \$500, two of \$1,000 each, and one of \$1,500.

A Narrow Escape.

A returned Texas traveler says that he was on a Missouri, Kansas & Texas train, running from Whitesboro to Gainesville, when he heard a scream, and looking up, saw a woman throwing her hands wildly toward a car window, through which the feet of a child were just disappearing. The woman shrieked that her child had fallen out of the window, and the passengers rushed to the windows and the rear of the coach, expecting to see the mangled body of a dead child, but their surprise was great to see the little one on her feet toddling toward the train, calling for her mamma. Owing to the breaking of the bell rope the train was not stopped for a quarter of an hour or so, but when it was finally backed down to the spot the child was found sitting on a lumber pile, in charge of some railroad employes, entirely unhurt, with the exception of a few slight bruises on one arm. The mother of the little girl, who had been wild with terror and grief, could scarcely be persuaded that she was uninjured. The girl's name was Norma Davis, and she was about eight years of age. The train was running at an average rate of speed. The teller's reputation for veracity is first-class, and he swears that he did not meet Mulhatten, and only saw Colonel Tom Ochiltree at a distance.

A New Style of Helper on a Grade.

An exchange says that recently a train carrying Forepaugh's Circus stalled on a grade on the Danbury & Norwalk road.

"The stalled train was No. 1 of the three show trains, and trains 2 and 3 were soon to follow. To guard against accident flagmen were sent back along the track.

"Perceiving that the locomotive was not equal to the emergency, Adam Forepaugh, Jr., unloaded 'Bolivar' from an elephant car and brought him to the rear of the train. The engineer of the incapable locomotive smiled in derision as he surmised the intentions of the young elephant trainer.

"'Bolivar' is a mountain of flesh, and as he stood at the rear of the box car which was the last on the train, his broad back more than topped it. After a few moments of preparation, fixing blankets for the massive monster to brace his head against, Forepaugh, Jr., gave the word, 'Mile up!'

"'Mile up' in elephant lingo means 'go ahead,' and Bolivar did go ahead; slowly but surely the train moved, at first inch by inch, and then at the words of encouragement that came from its keeper, it moved forward at a lively gait, while the railroad men and showmen joined in 'Three cheers for 'Bolivar!'

"It was found necessary to detain 'Bolivar' at the steep grade and assist trains two and three, demonstrating that one elephant at least is stronger than a locomotive."

The Fatal Flying Switch.

H. P. Cady, who has been employed for eight or nine months as a freight conductor on the New York & New England Railroad, was killed early this morning by being run over by the cars of his own train. He was bringing the early freight train through from Fishkill, and when between Southford (a station ten or twelve miles west of Waterbury), Pompanaug Valley, his train broke in two. Running the first part into Southford, Mr. Cady found an engine on the siding, and taking this went back for his other cars, intending to "fly" them in. He was on the engine, and without looking stepped from it just in front of the fast approaching cars, which struck him. He fell and was run over. Death was almost instantaneous. The body was brought to Waterbury to await the action of relatives, who were tele-

graphed for. Mr. Cady was a widower between 35 and 40 years of age. He has three children residing in Port Jervis, N. Y. He was a man of ability and highly esteemed by all of the officers and employes of the road.—*Hartford (Conn.) Times, June 8.*

The Panama Canal.

At the regular meeting of the Engineer's Club of Philadelphia on May 19, the Secretary presented a communication from Col. James Worrall with regard to the Panama Canal. Col. Worrall says:

"You may remember in my paper on the Panama project, I alluded to a catch-water dam on the Charges and compared it to the Schuylkill, endeavoring to convey an idea of its difficulty. By the inclosed slip from the New York Times, I see they have abandoned the idea of a dam.—What next will they abandon? If they come to quicksand they will abandon the whole thing, at least as a canal a *niveau*. "They can get across that neck of land with locks, but it will be many a long day before they get a level trench dug through the Andes even at the Panama Gap."

Mr. T. M. Cleemann thought that the question of whether to build dams or a parallel cut had not yet been decided.

Preliminary Issues.

Last fall a narrow-gauge road 22 miles long was planned and a company organized in Wisconsin, and an Eastern man who scented a chance for profitable investment called upon the president to make some inquiries. "How is the new line getting on?" he asked, after some general conversation. "Splendidly. We have the right of way for the first 5 miles and have taken steps to gobble it for the other 17." "How much stock have you issued?" "\$200,000." "And how much has been sold?" "Well, you see, it has all been preliminary thus far. We have sold enough stock to buy blue uniforms for all the general officers, furnish up several rooms with mahogany desks and moquette carpets, and as soon as we can work off sufficient to purchase horses and carriages for president, secretary and treasurer, and furnish the superintendent with a yacht, we shall begin the real serious work of building up a grand trunk line."—*Wall Street News.*

Raising a Sunken Locomotive.

A few days since we published a description of the raising of a sunken locomotive from a river bed out West, by means of lighters and scows—the work requiring much time and no end of labor and trouble. Chatting yesterday with a prominent railroad man here, he said: "You need not have gone away from home to have found a far better item than that. We can beat the West in some things, at least." Being pressed to explain, the veteran railroader said: "In 1867, Captain William Smith, then Assistant Superintendent of the Wilmington & Weldon Railroad, now Superintendent of the Raleigh & Gaston, concluded to raise an engine from the bed of the Roanoke River at Weldon. When the army burned the bridge in 1865, an engine which stood directly over the channel of the river fell into the deepest part, where it was entirely concealed by the water and mud. So there was the problem—the massive engine far below the level of the rebuilt bridge—now how to raise it. Captain Smith took with him a sailor, and having been an old salt himself, quickly solved the problem. He first took two large pontoons, and lashing them together, placed between them a number of empty spirit casks, flooring all over so that it formed a large raft having great weight-bearing power. Then the sailor, diving, passed under the engine a rope, by means of which massive chains were placed under the great mass of metal, making a sort of sling. To this other heavy chains were attached. The ends of these reached above the level of the track on the bridge. The ends were attached to locomotives which stood on the bridge, one headed toward Petersburg, the other toward Wilmington. Purchase blocks were so arranged that when the engines would start the chains would be pulled up perpendicularly and the engine lifted so that when it reached a point above the level of the water the pontoons could be placed under it and the engine lowered upon it. The plan worked to a charm. The signal was given the engines to move, and in just 17 minutes from the time the signal was given the engine was pulled out of the river and placed upon the raft. Then the raft was taken ashore. By means of a temporary track it was taken to the main track and carried to Wilmington, where it was speedily made serviceable. Now," said the veteran railroader, "that's my idea of quick time, and strictly business."—*Raleigh (N. C.) Observer.*

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:
Central, of New Jersey, special meeting, at the office in Jersey City, N. J., July 6, at noon.
East Tennessee, Virginia & Georgia, special meeting, at the office in Knoxville, Tenn., June 23, at noon.

Dividends.

Dividends have been declared as follows:
Albany & Susquehanna (leased to Delaware & Hudson Canal Co.), 3½ per cent., semi-annual, payable July 2. Transfer books close June 15.
Boston & Lowell, 2½ per cent., semi-annual, payable July 2, to stockholders of record June 16.
Boston, Revere Beach & Lynn, 3 per cent., semi-annual, payable July 2, to stockholders of record on June 20.
Chicago, Iowa & Nebraska (leased to Chicago & Northwestern), 4 per cent., semi-annual, payable July 2.
Connecticut River, 4 per cent., semi-annual, payable July 2, to stockholders of record on June 16.
Georgia, 2½ per cent., quarterly, payable July 15.
Old Colony, 3½ per cent., semi-annual, payable July 2, to stockholders of record June 15.
Oregon & Transcontinental Co., 1½ per cent., quarterly, payable July 16. Transfer books close June 25.
Rensselaer & Saratoga (leased to Delaware & Hudson Canal Co.), 4 per cent., semi-annual, payable July 2. Transfer books close June 15.
Richmond, Fredericksburg & Potomac, 2 per cent., semi-annual, on the stock and dividend obligations, payable July 1.
St. Louis, Jacksonville & Chicago (leased to Chicago & Alton), 5 per cent., semi-annual, payable Aug. 1. Transfer books close June 30.
St. Paul & Duluth, 3½ per cent., semi-annual, on the preferred stock, payable July 2.

Railroad and Technical Conventions.

The *General Baggage Agents' Association* will hold its next semi-annual meeting at the Tremont House, Chicago, Aug. 8.

The *Road-Masters' Association of America* will hold its first regular meeting in St. Paul, Minn., Sept. 12.

The *Master Car-Painters' Association* will hold its annual convention in Baltimore, Sept. 19.

The *New England Road-Masters' Association* will hold its first annual meeting in Boston, Sept. 20. Further particulars will be given hereafter.

The *American Street Railway Association* will hold its next meeting in Chicago, Oct. 9.

The *General Time Convention* will hold its fall meeting at the Grand Pacific Hotel in Chicago, Oct. 11.

The *Southern Time Convention* will hold its fall meeting at No. 46 Bond street, New York, Oct. 17.

The *American Association of Railroad Superintendents* will hold its fall meeting in Washington, Oct. 23.

Foreclosure Sales.

The *Laclede & Fort Scott* road will be sold by Daniel Dillon, trustee, at the Court House in St. Louis, July 9, under a deed of trust dated Dec. 2, 1879. The road was projected to run from Lebanon, Mo., to Fort Scott, Kan. The property consists of the franchises, some right of way and a little grading.

Trunk Line Presidents' Meeting.

A meeting of the Trunk Line presidents was held at Commissioner Fink's office in New York, June 20. There were present Presidents Jewett, Roberts and Rutter, Vice-President Garrett, of the Baltimore & Ohio, and General Manager Hickson, of the Grand Trunk.

It is understood that the occasion of the meeting was the cutting of rates by the Delaware, Lackawanna & Western and the Grand Trunk. The meeting was private, and the official statement is that no action was taken. It is said that assurances were received from President Sloan, of the Lackawanna road, that rates would be maintained by his line, and that the Grand Trunk made the same assurances.

Road-Masters' Association of America.

A meeting of road-masters was held in Chicago, June 14, at which it was resolved to organize the Road-Masters' Association of America. Officers were elected and other preliminary work done, after which there was a general discussion on questions presented by members.

It was decided to hold the next meeting at St. Paul, Minn., on the second Wednesday in September, and to invite all road-masters to be present and join the Association.

Pennsylvania Railroad Mutual Benefit Association.

The Pennsylvania Railroad Mutual Benefit Association held its second annual convention in Pittsburgh, June 13. At the morning session the report of the General Secretary was read for the year ending May 31. It showed receipts to the amount of \$1,051, and general expenses to the amount of \$631.41. The amount in the treasury is stated as \$1,245.25. During the year 6 members were killed or disabled, and 133 certificates of membership were issued. A Committee on Constitution was appointed, which reported in the afternoon, recommending several changes, which were adopted. A committee was also appointed to call on the officials of the road to endeavor to have them pay into the organization a pro rata of several hundred dollars now paid by the company to disabled employes. After electing officers the Association adjourned.

Railroad Employes' Mutual Benefit Association.

The thirteenth annual convention of the Railroad Employes' Mutual Benefit Association was held at the Grand Pacific Hotel in Chicago, June 13. Twenty-one members were present. Mr. C. L. Rising presided, and Mr. C. F. Resiguié was Secretary.

The President delivered his annual address, in which he incorporated a history of the association. He added that there were now 900 members, about 50 having withdrawn during the year.

Mr. A. Mackay, the Treasurer, reported that the receipts during the past year were \$18,295.51, out of which \$17,653.93 was paid as losses during the past year, leaving a balance of \$641.58.

The Secretary reported that since March, 1870, when the organization was effected, \$381,561 had been paid on account of mortality.

A resolution was passed to the effect that men in running departments of railroads be admitted as members, excepting brakemen on freight and construction trains and switchmen.

On motion, the salary of the Secretary was fixed at \$800 per annum.

After electing officers for the ensuing year, the Association adjourned.

Association of Railroad Telegraph Superintendents.

The first annual meeting of this Association was held in Chicago, June 13, Mr. W. K. Morley presiding.

The first day's session was devoted to the discussion of questions submitted by committees, and many matters of interest were brought up. An early adjournment was had, to enable members to visit the Exposition.

On the following day several reports from committees were received and acted upon. Among these was a plan for giving a service card to each operator who resigns or is discharged, which was adopted.

Ten new members were admitted into the Association. The constitution was amended so as to hold the annual meetings hereafter on the third Wednesday in June instead of in May. It was decided to hold the next meeting in Boston in 1884.

A committee was appointed consisting of the President and four members to revise the constitution. Mr. Reed, who was to have read a paper on telegraph cables, was unable to do so on account of the sudden death of his wife. The paper is to be read before the next meeting at Boston.

Resolutions of sympathy and condolence with Mr. Reed were presented and passed. After disposing of the usual routine business the convention adjourned.

Southern Association of General Passenger & Ticket Agents.

A called meeting was held last week in Nashville, Tenn., to consider spring rates, to adjust some differences in rates and to settle the question of excess weights in baggage.

Mr. C. P. Atmore was in the chair, and D. C. Allen Secretary. It was agreed to recommend the adoption of a similar resolution to that adopted by the National Association, not to carry a single package of more than 250 pounds as baggage.

Correspondence, however, will be required with the various lines and interests before this can be carried out. Some minor changes were made in excursion rates, and some differences adjusted, but as no quorum was present nothing important was done.

ELECTIONS AND APPOINTMENTS.

Austin, Mankato & St. Cloud.—The following officers have been elected: President, H. W. Bishop; Vice President, Conrad Gotzlan; Secretary, S. B. McConnell; Treasurer, H. F. Upham.

Baltimore & Drum Point.—At the annual meeting last week the following were chosen: President, Augustus

Albert; Directors, Andrew Banks, Wm. H. Blans, John T. Bond, Thomas S. Iglehart, Benjamin King, J. D. Oxner, P. V. Rogers, J. R. Swan, Jr., James A. Stewart, George H. Stewart, R. S. Williams. Secretary, H. A. Albert; Treasurer, Andrew Banks. Office in Baltimore.

Buffalo, New York & Philadelphia.—Mr. Esiggn Bennett is appointed General Agent, with office in Buffalo, N. Y. He will also have charge of the coal interests controlled by the company.

Carson & Colorado.—At the annual meeting recently the following directors were elected: S. P. Smith, H. M. Yerington, D. L. Bliss, W. D. Tobey, Alfred Helm, B. C. Whitman, D. A. Bender. The board elected H. M. Yerington President and General Superintendent; D. L. Bliss, Vice President; S. P. Smith, Treasurer; D. A. Bender, Secretary; E. B. Yerington, Assistant Secretary.

Central Pennsylvania.—The officers of this new company are: President, Thomas M. King, Pittsburgh, Pa.; Directors, Wemy McCullough, Greensburg, Pa.; H. S. Burgess, John M. Cleave, J. H. Smith, J. B. Washington, Alvin S. White, Pittsburgh. They are all connected with the Baltimore & Ohio.

Central Vermont.—At the adjourned annual meeting, June 20, the following directors were chosen: J. Gregory Smith, E. C. Smith, St. Albans, Vt.; J. R. Langdon, Montpelier, Vt.; W. H. Bingham, Stow, Vt.; Joseph Hickson, Montreal; E. H. Baker, B. P. Cheney, Boston.

Chicago, Burlington & Quincy.—Mr. George H. Crosby has been appointed General Agent at Denver, Col. He was recently General Freight Agent of the Kansas City, St. Joseph & Council Bluffs road.

Chicago, Milwaukee & St. Paul Proprietary Lines.—At annual meetings held in Chicago last week, directors were chosen as follows for the lines named, which are owned by this company: *Central Illinois & Wisconsin*.—John W. Cary, Ralph Emerson, S. S. Merrill, Alexander Mitchell, E. Walker. *Chicago, Milwaukee & St. Paul in Illinois*.—John W. Cary, Leslie Carter, Ernest Carter, S. S. Merrill, Alexander Mitchell, E. Walker, Elijah Wadsworth, Julius Wadsworth. *Chicago & Pacific*.—John W. Cary, Leslie Carter, Ernest Carter, S. S. Merrill, Alexander Mitchell, T. W. Wadsworth, E. Walker.

Cincinnati, Hamilton & Dayton.—At the annual meeting in Cincinnati, June 19, the following directors were chosen: John Carlisle, E. A. Ferguson, Henry Hanna, Wm. Hooper, F. H. Short, C. C. Waite, Cincinnati; J. M. Adams, Cleveland, O.; George R. Blanchard, Hugh J. Jewett, New York. Messrs. Adams, Hanna and Hooper are new directors, replacing C. S. Brice, C. R. Cummings and E. N. Lutzle. The board re-elected Hugh J. Jewett President; C. C. Waite, Vice-President; F. H. Short, Secretary and Treasurer.

Detroit, Lansing & Northern.—General Manager J. B. Mulliken issues the following circular:

"The following changes take effect June 10: J. J. McVean, heretofore Engineer of the Detroit, Lansing & Northern Railroad, is promoted to the rank of Chief Engineer, with authority extending over the Chicago, Saginaw & Canada and Saginaw Valley & St. Louis roads. John Doyle, Road-Master, is promoted to the rank of General Road-Master with authority as above. N. W. Merrill, Superintendent Saginaw Valley & St. Louis road, will also have charge of and be held responsible for the operation of the Chicago, Saginaw & Canada Division."

East Tennessee, Virginia & Georgia.—The office of Mr. Henry Fink, Vice-President and General Manager, has been removed from Lynchburg, Va., to Knoxville, Tenn., where his headquarters will hereafter remain.

Franklin & Megantic.—The directors of this new company are: J. W. Porter, Philip H. Stubbs, Strong, Me.; Isaac R. Bray, John Brackley, Freeman, Me.; George W. Harris, Samuel H. Hinds, Salem, Me.; Charles N. Porter, Eustis, Me.; Wm. Dolbier, John Winter, Eustis, Me.; Varnum B. Mead, Samuel W. Sargeant, Boston.

Great Eastern, of Canada.—At the annual meeting in Montreal, June 16, the following directors were chosen: C. N. Armstrong, M. Armstrong, Bradley Barlow, C. B. Carter, A. B. Chaffee, L. H. Massue, John Rankin. The board elected Mr. Armstrong President; John Rankin, Vice-President.

Kansas City, St. Joseph & Council Bluffs.—Mr. E. J. Swords has been appointed General Freight Agent. He was recently General Agent at Denver for the Chicago, Burlington & Quincy road.

Kentucky Union.—The officers of this company, as recently chosen, are: President, T. Jefferson Megibben; Vice-President and General Manager, Anson G. Phelps Dodge; Secretary, J. M. Thomas; Treasurer, R. P. Stoll; Manager Land and Mining Department, B. Crawford. The principal office is in Lexington, Kentucky.

Lackawanna & Pittsburgh.—The following appointments have been made: General Superintendent, R. M. Patterson; Superintendent Olean Division, W. O. Chapman; Chief Engineer, J. S. Peter; Auditor, M. S. Blair.

La Crosse & Onalaska Short Line.—The officers of this company are: President, J. B. Canterbury; Secretary, E. N. Osborne; Treasurer, D. D. McMillan. Office in LaCrosse, Wisconsin.

Louisville, New Albany & Chicago.—Mr. H. B. Smith is appointed General Freight Agent and D. F. Jennings Assistant General Freight Agent, with office in Chicago.

Master Car-Builders' Association.—At the convention in Chicago last week the old officers were re-elected, as follows: President, Leander Garey, New York Central & Hudson River Railroad, Grand Central Depot, New York; Vice-Presidents, M. P. Ford, Pittsburgh, Cincinnati & St. Louis Railroad, Columbus, O.; William McWood, Grand Trunk Railroad, Montreal, Canada; John W. Cloud, Pennsylvania Railroad, Altoona, Pa.; Treasurer, B. K. Verbyck, Chicago, Rock Island & Pacific Railroad, Chicago, Ill. Executive members (constituting with the foregoing officers the Executive Committee): L. Packard, Baltimore & Ohio Railroad, Baltimore, Md.; John S. Lentz, Lehigh Valley Railroad, Packerton, Pa.; W. Forsyth, Chicago, Burlington & Quincy Railroad, Aurora, Ill.; W. T. Hildrup, Harrisburg Car Co., Harrisburg, Pa.; J. W. Marden, Fitchburg Railroad, Boston, Mass.; Thomas A. Bissell, Dayton, O.

Milwaukee, Lake Shore & Western.—At the annual meeting in Milwaukee, June 13, the following directors were chosen: James H. Mead, Sheboygan, Wis.; Charles Luling, Manitowoc, Wis.; D. Parrish, Philadelphia; Charles Dana, Wm. H. Gulon, Henry B. Hammond, W. K. Hinman, Gordon Norrie, Charles G. Ramsey, F. W. Rhinelander, S. S. Sands, F. F. Thompson, Joseph Vilas, New York.

Missouri Pacific.—Mr. John B. Clements is appointed Resident Engineer, with office in St. Louis.

Mr. Frank Ferris has been appointed Commercial Agent for freight and passenger business in Mexico, representing

this company's lines. His principal office will be in Laredo, Texas.

Montreal, Chambly & Sorel.—At the annual meeting in Montreal, June 16, the following directors were chosen: C. N. Armstrong, M. Armstrong, C. B. Carter, L. H. Massue, John Rankin, J. S. C. Wurtele. The road is controlled by the Southwestern Company.

New York, Susquehanna & Western.—The following circular has been issued by the President, Mr. F. A. Potts, who will hereafter act as General Manager also; it is dated June 18:

"H. M. Britton having this day resigned the position of General Manager of this road, Mr. C. D. McKelvey has been appointed Assistant Superintendent, with office at Jersey City. His orders will be obeyed and respected accordingly.

Mr. C. T. Demarest has been appointed Purchasing Agent, with office at No. 93 Liberty street, New York.

New York, West Shore & Buffalo.—Mr. Caleb M. Wright has been appointed Supervisor of Trains, with office in Syracuse, N. Y. He was recently Train-Master of the Albany Division of the Pennsylvania Railroad.

Norfolk & Western.—At a meeting of the board in Philadelphia, June 20, E. W. Clark was chosen a director in place of James P. Scott, resigned.

The board then elected F. J. Kimball (late First Vice-President) President in place of George F. Tyler, resigned, Mr. A. J. Hemphill was chosen Secretary in place of G. R. W. Ames, recently made Treasurer.

Northern Pacific Terminal Co.—At the annual meeting in Portland, June 18, the following directors were chosen: C. A. Dolph, Henry Failing, R. Koehler, C. H. Lewis, C. H. Prescott, Portland, Oregon; Edward D. Adams, Vernon H. Brown, George R. Howell, Henry Villard, New York.

Ogdensburg & Lake Champlain.—At the annual meeting in Ogdensburg, June 20, the following directors were chosen: W. J. Averill, Ogdensburg, N. Y.; D. W. Lawrence, Malone, N. Y.; Horace Fairbanks, St. Johnsbury, Vt.; Warren K. Blodgett, Peter Butler, S. A. Carlton, Walter L. Frost, W. A. Haskell, David P. Kimball, Sterne Morse, Emmons Raymond, J. Thomas Vose, Boston; James H. Rutter, New York. The board elected Walter S. Frost President; H. A. Church, Secretary and Treasurer. Mr. Frost succeeds Warren K. Blodgett, who declined a re-election.

Oregon Improvement Co.—At the annual meeting in Portland, June 18, the following directors were chosen: J. N. Dolph, Henry Failing, C. H. Lewis, C. H. Prescott, S. G. Reed, Portland, Oregon; George M. Pullman, Chicago; Wm. Endicott, Jr., N. P. Halliwell, Boston; Artemas H. Holmes, New York.

Oregon Railway & Navigation Co.—At the annual meeting in Portland, June 18, the following directors were chosen: C. H. W. Corbett, J. N. Dolph, Henry Failing, W. S. Ladd, C. H. Lewis, C. H. Prescott, S. G. Reed, Portland, Oregon; George M. Pullman, Chicago; Wm. Endicott, Jr., N. P. Halliwell, Boston; Artemas H. Holmes, W. H. Starbuck, Henry Villard, New York.

Oregon & Transcontinental Co.—At the annual meeting in Portland, June 18, the following directors were chosen: George J. Ainsworth, C. A. Dolph, J. N. Dolph, Henry Failing, R. Koehler, C. H. Lewis, C. H. Prescott, Paul Schulze, G. W. Weidler, Portland, Oregon; Frederick Billings, Woodstock, Vt.; Wm. Endicott, Jr., N. P. Halliwell, Boston; Edward D. Adams, Egisto P. Fabbri, Horace Porter, A. J. Thomas, Henry Villard, New York.

Pennsylvania Railroad Mutual Benefit Association.—At the annual meeting in Pittsburgh last week, the following officers were elected: President, Jacob Weidman; First Vice-President, J. K. Russell; General Secretary, J. H. Gillespie; Treasurer, D. O. Shaver; Directors, M. S. Utts, E. Pitcairn, D. M. Watt and M. Barkart; Auditors, J. J. Strandly, P. G. Nash, John Seaton.

Philadelphia & Reading.—Mr. J. H. Olhausen is appointed Superintendent of the new Mahanoy & Susquehanna Division, with office at Palo Alto, Pa.

The following appointments of division road-masters are announced: Tamaqua Division, including Nesquehoning Branch, W. H. De Chant; Philadelphia Division, including Bound Brook Branch, M. F. Bonzano; New Jersey Central Division, W. H. Peddle, office at Elizabeth, N. J.; New Jersey Southern Division and New York & Long Branch road, W. W. Clark, office at Red Bank, N. J.; Lehigh & Susquehanna Division, G. W. Twining, office at Mauch Chunk, Pa.

Pittsburgh, Bradford & Buffalo.—The directors of this company, chosen June 18, are: Major Krebs, Edenburg, Pa.; George W. Arnold, Clarion, Pa.; C. W. Mackey, Franklin, Pa.; W. C. Mobley, Foxburg, Pa.; James Callery, Wm. Semple, Pittsburgh. The board elected Wm. Semple President; James Callery, Vice-President; W. C. Mobley, Superintendent.

Railroad Employes Mutual Benefit Association.—At the annual meeting in Chicago, June 13, the following officers were chosen: President, C. L. Rising; Vice-President, D. Kenyon; Directors, C. M. Higginson, J. A. Robbins, B. T. Whitman. The board afterward elected C. F. Resseguie, General Secretary; Alexander McKay, Treasurer; John Dunn, Frank S. Bagg, C. H. Davis, J. A. Robbins and C. M. Higgins, Executive Committee.

Railroad Telegraph Superintendents' Association.—At the annual convention in Chicago, June 13, the following officers were chosen to serve during the ensuing year: President, W. K. Morley, Chicago & Alton; Vice-President, C. Selden, Wabash, St. Louis & Pacific; Secretary and Treasurer, P. W. Drew, Chicago & Eastern Illinois.

Road-Masters' Association of America.—At a meeting held in Chicago, June 14, the following officers were chosen: President, J. Burnett, Chicago, Rock Island & Pacific; First Vice-President, George C. Marischal, Louisville & Nashville; Second Vice-President, David Wright, Chicago, Milwaukee & St. Paul; Secretary, John Turney; Treasurer, J. Adamson.

Rochester & Genesee Valley.—At the annual meeting last week the following were chosen: President, James Brackett; Vice-President, D. W. Powers; Directors, H. C. Brewster, Aaron Bronson, J. F. Butterfield, W. N. Cogswell, John H. Foley, John Lutes, D. B. McAlpine, J. B. Perkins, G. H. Perkins, H. C. Roberts, Frank S. Upton; Secretary and Treasurer, J. B. Perkins. The road is leased to the New York, Lake Erie & Western.

Rochester & Pittsburgh.—Mr. D. J. Barnes has been appointed Division Engineer of the Buffalo Branch in place of R. P. Van Dusen, resigned.

Rock Island & Peoria.—At the annual meeting in Peoria, Ill., June 13, the following were chosen directors: P. L. Cable, R. R. Cable, W. H. Decker, David Dows, Cornelius Lynde, H. B. Ludlow, H. H. Porter. The board

elected P. L. Cable, President; Cornelius Lynde, Secretary; H. B. Ludlow, Treasurer and Superintendent.

Rumford Falls & Buckfield.—At a meeting held in Portland, Me., June 18, the number of directors was increased from five to seven, and the new places were filled by Charles R. Milliken and Wm. H. Moulton. The board then elected Wm. L. Putnam President in place of Israel Washburn, deceased.

St. Louis, Creve Coeur & St. Charles.—The directors of this company are: George T. Branham, S. H. Cobb, M. A. Downing, J. D. Swan, Indianapolis, Ind.; Frederick M. Colburn, St. Louis.

Suedeshoro.—At the annual meeting last week the following were chosen: President, Samuel Black; Directors, R. L. Ashurst, J. H. Bradley, S. C. Clark, D. B. Gill, Matthew Gill, Wm. Knight, Edwin Stokes, I. H. Vanneman; Secretary and Treasurer, D. B. Gill. The road is leased to the West Jersey Company.

Texas Trunk.—This company was reorganized at Dallas, Tex., June 16, when the following directors were chosen: S. J. Adams, L. A. Piers, Jules Schneider, Alexander Sanger, R. V. Tompkins, Dallas, Tex.; J. W. White, Manchester, N. H.; D. R. Sortwell, Cambridge, Mass.; M. F. Dickinson, Boston; Charles Stepath, New York. The board elected S. J. Adams President; J. W. White, Vice-President; J. R. White, Secretary; Alfred Davis, Treasurer. The offices will be in Dallas, Tex.

United New Jersey.—At the annual meeting recently the following directors were chosen: Joseph D. Bedle, Jersey City, N. J.; Alfred L. Dennis, F. Wolcott Jackson, Newark, N. J.; John G. Barron, Charles E. Green, John G. Stevens, Robert F. Stockton, Trenton, N. J.; Wm. Bucknell, Thomas McKean, Samuel Welsh, Philadelphia; John Jacob Astor, Robert Lenox Kennedy, New York. The only new director is Mr. Jackson, who succeeds the late Ashbel Welch. Mr. Charles E. Butts, of Burlington, is state director, holding over from last year, the late Legislature having held no joint meeting.

Union Pacific.—Mr. Erastus Young has been appointed auditor, with office in Omaha, Neb. Mr. Young was recently auditor of the New York & New England, and was formerly with the Atchison, Topeka & Santa Fe.

Valley (of Ohio).—Mr. Charles McD. Kile has been appointed General Freight and Passenger Agent, with office in Cleveland, Ohio.

Yardmasters' Mutual Benefit Association.—At the annual convention in Denver, Col., last week, the following officers were chosen: John C. Campbell, Pennsylvania, President; W. J. Kenney, Chicago, Vice-President; John C. Robinson, Boston, Second Vice-President; Joseph Sanger, Indianapolis, Secretary and Treasurer; E. K. Hastings, Manchester, N. H., Corresponding Secretary.

PERSONAL.

—Mr. J. B. Collin, Mechanical Engineer of the Pennsylvania Railroad, was married to Miss Kate Leet, of Altoona, no Thursday, June 7.

—Mr. George W. Bentley, for nearly ten years past General Superintendent of the New London Northern Railroad, has resigned his position.

—Mr. George F. Tyler has resigned his position as President of the Norfolk & Western Co., which he has held since the organization of the present company.

—Mr. A. H. Hanson, General Passenger Agent of the Illinois Central, was married last week to Miss Osgood, of Salem, Mass. Mrs. Hanson received some valuable presents from her husband's associates on the road.

—An association, chiefly composed of employes of the Central Railroad Co. of Georgia, has been formed for the purpose of erecting a memorial to the late Wm. M. Wadley, for so many years President of that company. It has not yet been decided what form the memorial is to take.

—Mr. James F. Randolph has resigned his position as Superintendent of the New York & Long Branch road. Mr. Randolph has been Superintendent since the road has been worked under the joint contract with the Pennsylvania and the New Jersey Central, and it is said that his resignation is on account of the action of the Reading Co. in relation to the contract.

—Mr. Charles F. Jauriet died at his residence in Chicago, June 17, aged 65 years. For 10 years past Mr. Jauriet has been General Master Mechanic of the United States Rolling Stock Co., and before that he was for a long time General Master Mechanic of the Chicago, Burlington & Quincy. Mr. Jauriet was one of the best known Master Mechanics in the country; he was entirely a self-made man, having attained his position by hard and persistent work. He was a man of much force and ability. For some time past, we believe, he had been in failing health.

TRAFFIC AND EARNINGS.

Liability for Delay by Snow Blockades.

The Iowa Railroad Commissioners June 12 made a report of their investigation of the complaint of Way & Packard, which was as follows:

That in the month of February, 1881, the complainants engaged in the business of buying and shipping live stock at Clarion, Wright County; that on ordering two or three days in advance the Burlington, Cedar Rapids & Northern Company was in the habit of furnishing them all the cars they needed in which to ship their stock; that Feb. 19, 1881, they notified the agent at Clarion that on the 23d of the same month they would need four cars, two in which to ship cattle and two to ship hogs; that, relying on the cars at the time ordered, they purchased the hogs and cattle. The company furnished them two cars March 1, 1881, in which they shipped their cattle, and two cars March 2, 1881, in which they shipped their hogs; that between Cedar Rapids and Chicago the train containing the hogs was blockaded by snow, and detained five days between the time the cars were ordered and their arrival in Chicago; that the market fell 20 cents per hundred pounds and the hogs shrank in weight 3,000 lbs.

They returned the following for damages: Loss of 20 cents per hundred lbs. on 36,000 lbs. \$72; shrinkage in weight, 3,000 lbs., at \$5.50, \$165; total, \$237. They furthermore say that they are informed and believe that cars were furnished at Iowa Falls and at Dows, about Feb. 23, on orders made after their four cars were ordered, and that they are informed and believe that the company has paid damages to other dealers for failure to provide cars.

In reply Mr. Ives, Superintendent, refers to the lapse of nearly two years between the time in which the loss occurred and the date of the complaint, and say that at this day it is impossible to recall the circumstances, but he regards it as due to the severity of the winter and the extensive blockades on that portion of his line. The two cars were blockaded at

Sterling on the Chicago & Northwestern Railway. When the claim was presented in April, 1881, a prompt movement of the cars were shown on his line, and the Chicago & Northwestern company investigated the matter and decided not to allow the claim. He denies having paid damages to other parties for detention at that time. Mr. Packard verifies by affidavit the main facts stated in the complaint, though evidently in some minor matters his memory is in fault. There are two cases for which the complainants claim damages: First, the loss which occurred by the fluctuation of markets; second, the shrinkage by detention at Sterling. As the losses did not occur on the lines of the respondent, the matter is reduced to the simple investigation as to whether the company could, in the regular fulfillment of its order, with justice to all applicants for cars, have supplied them early enough to have reached Chicago before the blockade. Neither party seems to have any record that they have attempted to introduce showing the actual state of facts. Two of the Commissioners were on this line of road. Feb. 23, 24 and 25 the road was blocked with heavy drifts from a point four miles east of Dysart at various places the entire distance to Clarion, 84½ miles. The Commissioners are informed by a party who was on the first passenger train that went through that the road was not open to Clarion until March 1. That day, it seems, two cars were furnished Way & Packard, and two on the following day. The Commissioners are of the opinion that under these circumstances, that seem to have been overlooked by both parties, that the cars were furnished as soon after the blockade was raised as could be reasonably expected, and therefore find there is no good ground for the complaint.

Railroad Earnings.

Earnings for various periods are reported as follows:

Five months ending May 31:

	1882.	Inc. or Dec.	P. c.
Alabama Great Southern.....	\$412,127	\$808,050 I.	\$94,077 30.5
Central of Georgia.....	1,273,000	1,163,781 I.	108,219 9.3
Chic. Bur. & Quincy.....	9,345,493	7,719,451 I.	1,626,042 21.1
Net earnings.....	4,268,058	2,574,530 I.	1,693,528 27.2
Des Moines & Ft. Dodge.....	118,738	164,078 D.	45,340 38.2
Detroit, Lansing & No.....	508,798	636,588 D.	127,790 25.1
Grand Trunk.....	7,076,812	6,491,375 I.	585,437 8.3
Houston, E. & W. Texas.....	123,812	95,979 I.	27,833 22.5
Kan. City, Ft. Scott & Gulf.....	748,238	649,751 I.	98,487 13.2
Kan. City, Law. & So. Kan.....	578,718	387,910 I.	190,808 32.9
Nash., Chatta. & St. L.....	911,328	844,619 I.	66,709 7.3
Net earnings.....	896,984	861,116 I.	35,868 3.9
Main Line.....	512,016	57,458 I.	57,458 11.2
Belleville Line.....	328,531	837,387 D.	5,756 2.6
Vicksburg & Meridian.....	208,100	188,044 I.	17,056 8.2

Four months ending April 30:

	1882.	Inc. or Dec.	P. c.
Det., Grand Haven & Mil.....	\$421,572	.....	.....
Net earnings.....	59,724	.....	.....
Florida Cent. & Western.....	140,245	\$142,376 D.	\$2,131 1.5
Minneapolis & St. Louis.....	495,026	445,632 I.	49,394 11.3
N. Y. Lake Erie & West.....	5,903,929	5,802,131 I.	101,797 1.7
Net earnings.....	1,514,384	1,616,190 D.	101,806 6.7

Month of April:

	1882.	Inc. or Dec.	P. c.
Det., Grand Haven & Mil.....	\$114,756	.....	.....
Net earnings.....	34,431	.....	.....
Minneapolis & St. Louis.....	155,865	\$100,619 I.	\$55,246 35.4
N. Y. Lake Erie & West.....	1,570,743	1,570,743 D.	0 0.0
Net earnings.....	468,971	669,018 D.	200,047 20.9
Oregon Improvement Co.....	312,901	258,078 I.	54,823 17.5

Month of May:

	1882.	Inc. or Dec.	P. c.
Alabama Great Southern.....	\$71,781	\$54,833 I.	\$16,948 23.6
Boston, Hooosic & W.....	28,932	21,738 I.	7,194 24.7
Central of Georgia.....	155,700	144,164 I.	11,536 7.4
Net earnings.....	15,284	.....	.....
Chil., Burlington & Quincy.....	1,885,077	1,595,231 I.	289,846 15.4
Chic. Bur. & Quincy.....	738,854	647,707 I.	91,147 12.3
Des Moines & Ft. Dodge.....	20,044	34,796 D.	14,752 73.6
Detroit, Lansing & No.....	128,771	134,576 I.	5,805 4.5
Houston, E. & W. Texas.....	32,775	23,057 I.	9,718 29.3
Ind. Bloom. & Western.....	135,824	107,634 I.	28,190 20.7
Kan. City, Law. & So. Kan.....	132,840	73,367 I.	59,473 44.7
Nash., Chatta. & St. L.....	171,079	154,163 I.	16,916 9.9
Net earnings.....	75,958	68,489 I.	7,469 9.8

Main Line:

	1882.	Inc. or Dec.	P. c.
Main Line.....	101,480	102,923 D.	1,443 1.4
Belleville Line.....	59,627	70,947 D.	11,320 18.0
Vicksburg & Meridian.....	35,660	30,832 I.	4,828 13.5
Wisconsin Central.....	115,193	126,557 D.	11,364 9.8

First week in June:

	1882.	Inc. or Dec.	P. c.
Bur., Cedar Rapids & No.....	\$58,656	\$47,466 I.	\$11,190 19.0
Chil. & Grand Trunk.....	50,278	56,548 I.	6,270 12.5
East Tenn., Va. & Ga.....	60,435	46,028 I.	14,407 23.8
Ind. Bloom. & Western.....	59,466	50,912 I.	8,554 14.4
Illinois Central.....	232,700	216,349 I.	16,351 7.0
Memphis & Charleston.....	17,362	18,909 D.	1,547 8.9
Norfolk & Western.....	41,475	36,037 I.	5,438 13.1

Second week in June:

	1882.	Inc. or Dec.	P. c.
Chil., Mil. & St. Paul.....	\$450,000	\$368,792 I.	\$81,208 18.0
Chicago & Alton.....	154,585	143,919 I.	10,666 6.9
Chil. & Eastern Illinois.....	34,620	31,605 I.	3,015 8.7
Chil. & Northwestern.....	484,500	478,100 I.	6,400 1.3
Chil., St. P. Min. & Oma.....	92,000	83,600 I.	8,400 9.1
Denver & Rio Grande.....	145,500	123,300 I.	22,200 15.5
Hannibal & St. Joseph.....	43,000	36,300 I.	6,700 15.6
Illinois Central.....	247,800	232,860 I.	14,940 6.0
Louisville & Nashville.....	229,470	191,180 I.	38,290 16.5
Mil. Lake Shore & West.....	19,880	17,100 I.	2,780 13.9
Mo. Pacific Lines.....	897,207	772,233 I.	124,974 13.9
Northern Pacific.....	187,900	164,410 I.	23,490 12.5
St. P., Minn. & Man.....	233,000	212,500 I.	20,500 8.8

* Deficit.

Grain Movement.

For the week ending June 9, receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

Year.	Northwestern receipts.	Total.	By rail.	P. c. by rail.	Atlantic receipts.
1877.....	2,076,791	2,166,457	604,033	30.6	1,666,378
1878.....	2,660,004	3,576,261	778,483	21.9	4,984,836
1879.....	4,773,299	5,002,825	2,706,245	54.0	9,065,502
1880.....	5,724,374	6,091,823	1,727,629	28.2	7,633,849
1881.....	7,320,207	6,178,194	1,634,114	26.4	5,743,788
1882.....	3,110,851	3,640,570	1,414,928	38.9	2,488,874
1883.....	5,880,199	4,439,078	1,433,201	32.3	3,943,139

Thus the receipts of the Northwestern markets this year were no less than 2,770,000 bushels (50 per cent.) more than last year, and more than in the corresponding week of any previous year except 1881. There were also 1,092,500 bushels (23 per cent.) more than in the previous week of this year, and the largest since the middle of March. More than half of these large receipts were corn, and one-fourth oats. Most of the increase over the previous week (938,000 out of 1,093,000 bushels) was at Chicago and Milwaukee, and there was even a decrease at St. Louis, which did not receive one-fifth as much as Chicago; and not as much as Milwaukee.

The shipments of these markets were 798,500 bushels (22 per cent.) more than last year, but much less than in either of the three years previous. They were 284,000 bushels more than in the previous week of this year and were the largest for five weeks. The rail shipments were nearly the same as the three weeks previous. The shipments down the Mississippi were 362,233 bushels, or 8.3 per cent. of the whole.

The Atlantic receipts of the week were 1,454,000 bushels more than last year, but much less than in the corresponding week of any previous year since 1877. They were nearly the same as in the previous week of this year, and less than for two weeks before that.

Exports from Atlantic ports for the week have been:

	1881.	1882.	1883.
Flour, bbls.....	87,677	38,064	105,216
Grain bush.....	4,039,736	894,198	2,292,075

The exports this year are about 1,700,000 bushels more than last year, but 1,668,000 less than in 1881.

Coal.

Coal tonnages reported for the week ending June 9 are as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Anthracite.....	494,734	588,963	D. 94,229	16.0
Semi-bituminous.....	116,837	79,845	I. 36,992	46.4
Bituminous, Penna.....	62,212	63,008	D. 796	1.3
Coke, Penna.....	54,949	52,402	I. 2,547	4.8

Anthracite trade is more active, but prices are reported considerably below the company's lists, except for a few fancy grades of coal for domestic use.

The shipments of Cumberland and Clearfield coals for the week were very nearly equal.

Anthracite coal tonnage for May and the five months ending May 31 is reported as follows by Mr. John H. Jones, Official Accountant, the statement including the entire production of anthracite coal, excepting that consumed by employees, and for steam and heating purposes about the mines:

	May.	Five months.	
	1883.	1882.	1883.
Phila. & Read.....	503,069	541,462	2,618,729
Lehigh Valley.....	483,258	480,991	2,318,801
Central of N. J.....	380,729	332,628	1,745,399
Del., Lack. & W.....	391,239	368,249	1,802,037
Del. & H. Canal Co.....	296,264	215,042	1,243,813
Pennsylvania R. R.....	219,609	208,899	955,297
Penna. Coal Co.....	109,778	103,688	528,067
N. Y., L. E. & W.....	25,277	15,140	127,443
Total.....	2,439,224	2,263,097	11,340,186

The increase for the month was 173,127 tons, or 7.6 per cent.; for the five months, 1,397,373 tons, or 14.1 per cent. All the companies show increases, both for the month and the five months.

In addition to the amount above given there were, in May of this year, 37,949 tons transported from mines by the Delaware & Hudson Canal Co., which is included in tonnage of other interests.

Lehigh Valley tonnage includes the production of the mines of the State Line & Sullivan Co., which amounted to 5,789 tons in May.

The stock of coal on hand at tidewater shipping points May 31 was 645,377 tons, against 719,232 tons April 30, a decrease of 73,855 tons during the month. The stock on hand May 31, 1882, was 611,441 tons, showing an increase this year over last of 33,936 tons, or 5.6 per cent.

On the basis of this statement the Philadelphia & Reading Co. now controls 38.5 per cent. of the whole anthracite tonnage; the Pennsylvania Railroad Co., should its lease of the Lehigh Valley be concluded, will control 28.9 per cent., leaving 32.6 per cent. to the other four companies, the Delaware, Lackawanna & Western having 15.9, the Delaware & Hudson 11.0, the Pennsylvania Coal Co. 4.6, and the Erie 1.1 per cent. The control of the combination will depend on the part taken by the outside companies, whether with the Reading or the Pennsylvania.

The coal tonnage of the Pennsylvania Railroad for the week ending June 9, was:

	Coal.	Coke.	Total.
Line of road.....	128,688	45,761	174,249
From other roads.....	37,533	9,388	46,921
Total.....	166,221	55,149	221,370

The total tonnage this year to June 9 was 5,179,913 tons, against 4,884,467 tons to the corresponding date in 1882, an increase of 295,446 tons, or 6.0 per cent.

The coal tonnage of the Chesapeake & Ohio road for the five months to the end of May was:

	1883.	1882.	Increase.	P. c.
Coal.....	409,318	354,882	54,436	15.3
Coke.....	50,101	41,436	8,665	20.9
Total.....	459,419	396,318	63,101	15.9

The coal shipments this year included 11,150 tons canal; 46,801 tons splint and block; 164,765 tons gas coal; 186,602 tons New River; total, 409,318 tons. The increase was in gas coal and New River coal, canal and block showing a decrease.

Cumberland coal shipments for the week ending June 16 were 51,109 tons. The total shipments this year up to June 16 were 995,574 tons.

Chicago-Kansas City Tickets via St. Louis.

The Chicago Tribune of June 13 says:

"The Wabash has abandoned its train between this city and Kansas City via Hannibal and Moberly, which used to leave here at 12:30 p. m., and hereafter will run no direct trains between the two points. The morning and evening trains to St. Louis will make close connections at that point for Kansas City, and tickets will be sold through to Kansas City by those trains at the same rate as by the direct route. Heretofore no tickets through to Kansas City were sold via St. Louis. As the new change affords an opportunity to scalp the Kansas City tickets at St. Louis and thus give the Wabash an advantage, the Alton has given orders to place on sale tickets to Kansas City via St. Louis at the same rate as via the direct trains. This places the Alton on the same plane as the Wabash if the tickets via St. Louis are scalped."

The Wabash's line from Chicago to Kansas City via Hannibal and Moberly was a short one, considering that the part of it from Chicago to Hannibal is 314 miles long, against 263 miles to Quincy by the Chicago, Burlington & Quincy. But from Hannibal to Kansas City is only 199 miles by the Wabash—while by the Hannibal & St. Joseph it is 226 miles from either Hannibal or Quincy. The Chicago, Burlington & Quincy's route is thus 489 miles long, or only 24 miles shorter than the Wabash's. By way of St. Louis the Wabash route is 563 miles long; the Chicago & Alton's, 606. By the latter the passenger would go back over the route he came to St. Louis from St. Louis northward to Roodhouse, 71 miles. Considering the importance of the travel between Chicago and Kansas City, it is remarkable that the Wabash should abandon its short route between these two places. It is shorter than its new line between Chicago and Council Bluffs, which is 561 miles against 490 by the shortest lines; and the Kansas City travel is probably as large as the Omaha travel, and perhaps larger. It is true, however, that for passengers to and from points east of Detroit and Toledo the Wabash's interests cause it to cultivate the route via St. Louis rather than that via Chicago, the former giving it a lead of 713 miles, against 513 by the latter; and this doubtless causes the lines east of Chicago to ticket passengers by other routes west of Chicago in preference to the Wabash, whose share of the travel between Chicago and Kansas City may have been small.

Ohio River Rates.

A meeting was held in Cincinnati last week to consider the question of rates from Chicago to Ohio River points, with a view to preventing cutting and irregular rates. No final action was taken, but the question of forming a pool or several pools was referred to a committee to report at a future meeting.

Iowa Trunk Lines Association.

At a meeting held last week in Chicago the question of rates on business from interior points in Illinois and Wis-

consin to Missouri River points was discussed. The subject was finally referred to a committee, to report at the next meeting.

The question of establishing arbitrary rates between Chicago and Missouri River points on through business was discussed, but finally put over to the next meeting.

The Agreement on Pacific Coast Business.

Commissioner Fick has issued the following circular as the record of the recent meeting at his office in regard to the Pacific Coast business:

"At a conference between the Trunk Line Committee and the representatives of the Pacific roads, held at the office of the Commissioner, New York, Friday, June 8, 1883, the following agreement regarding the maintenance of rates on California traffic was made:

"Then the full established rates, tariff or contracts, as the case may be, shall be maintained by all lines for all California business, for the east-bound and west-bound, and that in case the Commissioner of the Eastern Trunk Lines is satisfied that the through rates are cut via any line, upon request from him, the companies parties to this agreement will use all legitimate means to enforce the maintenance of established rates.

"It is understood that the steamer lines from New York and other Atlantic seaboard points, via New Orleans and Galveston, may issue insured bills of lading at the same through rates as those made by the all-rail lines, but that no allowance shall be made shippers or consignees on account of insurance.

"All lines shall promptly furnish said Commissioner with copies of their way-bills for all their business covered by this agreement, and shall give any additional information or reports regarding said business that may be desired by the Commissioner.

"This agreement shall take effect Monday, June 18, 1883, and remain in force until Dec. 31, 1883."

Lackawanna Line.

The following circular from W. H. Smith, Manager of this fast freight line, is dated Buffalo, N. Y., June 11:

"Below please find numbers and initials of cars in this line:

	Numbers.	
Boston, Hoosac Tunnel & Western.....	700 to 1,499 inclusive	
Delaware, Lackawanna & Western.....	1,000 " 1,499 "	
Delaware & Hudson Canal Co.....	3,200 " 3,299 "	
Wheeling & Lake Erie.....	4,000 " 4,099 "	
Philadelphia & Reading.....	8,500 " 8,599 "	
Chicago & Northwestern.....	9,550 " 9,799 "	
New York, Chicago & St. Louis.....	22,000 " 22,499 "	

"The movements of these cars should be reported to C. W. Cushman, Manager, the Railway Car Association, Buffalo, N. Y.

"The mileage account, report and settle direct with owners, a separate item from their common cars."

Traders' Despatch.

The following circular from T. N. Jarvis, Manager of this line, is dated Buffalo, N. Y., June 5:

"Below please find the initials and numbers of the cars in this line. The assignment of numbers by roads is not complete. You will be advised from time to time of any changes that may occur. The movements of these cars should be reported to C. W. Cushman, Manager, the Railway Car Association, Buffalo, N. Y. The mileage must be reported to and settled direct with owners, a separate item from their common cars:

	Numbers.	
Delaware & Hudson Canal Co.....	3,100 to 3,199 inclusive	
New York, Chicago & St. Louis.....	20,000 " 20,499 "	
New York, Lake Erie & Western.....	28,600 " 29,599 "	
Lehigh Valley Railroad.....	50,001 " 50,199 "	

RAILROAD LAW.**Sleeping Car Decisions.**

In the case of Gardner against Pullman's Palace Car Co., plaintiff was robbed of money, etc., while asleep in a car of the company, and brought suit in the District Court at Pittsburgh to recover. The Court ruled that as the sleeping car company advertises itself to the public as providing suitable cars in which to sleep, impliedly agrees that arrangements are so made that the passenger may go to sleep, and that a reasonable watch over the safety of his person and property will be maintained by it while the passenger is helpless from sleep to guard himself; and, failing to keep such a watch, the company was liable for the loss. The jury returned a verdict for plaintiff.

The Pullman Co. will appeal the case to the Supreme Court, as it is regarded as a test case of considerable importance.

The Iowa Railroad Commission has decided that a holder of a second-class ticket cannot demand to be carried in a sleeping car on paying the sleeping car charges. The railroad company has a right to insist that he must have a first-class ticket before riding in a sleeping car.

OLD AND NEW ROADS.

Alabama Great Southern.—The new stock to the amount of \$1,250,000 (£250,000), the issue of which was recently authorized, has all been taken in London. The proceeds will be applied to the laying of steel rails on the road.

Anniston & Atlantic.—This company has begun work on a line from Anniston, Ala., the crossing of the Georgia Pacific and the Selma Division of the East Tennessee, Virginia & Georgia, to Talladega and Goodwater. When this section is completed, the purpose is to extend the road through Gadsden to Gunter's Landing on the Tennessee.

Atlantic & Pacific.—The financial article of the Boston Transcript says:

"It appears that Mr. Huntington is one of the largest purchasers of the Atlantic & Pacific stock recently disposed of by the company, and that, when the purchase of the entire 200,000 shares has been perfected, Mr. Huntington will have about \$6,000,000 invested in the Atlantic & Pacific property. We understand that the so-called 'treasury' stock sold by the Atlantic & Pacific Railroad Co. is borrowed from the trustees, who have held most of the capital in trust for the owners, the Atchison, Topeka & Santa Fe Railroad Co. and the St. Louis & San Francisco Railroad Co. This was accomplished by a three-fourths vote of the directors of each of the three companies in interest. The capital stock of the Atlantic & Pacific Railroad Co. is \$59,760,300, of which \$51,302,800 was held by the trustees, \$4,000 by the directors for qualification purposes, \$3,300,000 is reserved to be issued upon the block subscriptions now outstanding, and the remaining \$5,000,000, with the exception of a few shares, is in the treasury, but as the property of the Atchison and Frisco companies. The \$20,000,000 sold is borrowed from the trustees as stated above, but their control of the property is not impaired, as they still have a majority by holding \$31,300,000, or, with the other \$5,000,000 property belonging in their possession, \$36,300,000."

This statement is given here entirely on the authority of the Transcript; if true, it is decidedly interesting.

Attica & Oak Orchard.—Surveys have been begun for this road from Attica, N. Y., northward to Oak Orchard harbor on Lake Ontario. It is intended to be an outlet to the lake for the system of narrow-gauge roads in Southwestern New York and Northwestern Pennsylvania, in the Bradford and Allegheny oil districts.

Austin, Mankato & St. Cloud.—This company has been reorganized, and preliminary surveys are to be made for the road at once. The proposed line is from St. Cloud, Minn., by way of Litchfield, Hutchinson and Mankato to Austin.

Buckhannon & Weston.—This road is now completed and was formally opened for travel June 9. It extends from Weston, W. Va., east by south to Buckhannon, 15 miles, and is of 3-ft. gauge. It is an extension of the Clarksburg, Weston & Glenville road, and has the same ownership, although a distinct organization.

Cape Girardeau Southern.—This company offers to build a branch from Sturdevant, Mo., to Dexter, about 23 miles, on condition that the people on the line give the right of way and \$20,000 in addition.

Carolina Central.—At Raleigh, N. C., June 7, in the United States Circuit Court, argument was finished in the case of Mrs. Virginia B. Matthews, against the Seaboard & Roanoke Railroad Co., to recover possession of the Carolina Central Railroad, which is now under the management of the Seaboard road. The plaintiff alleged that the control of the Carolina Central Railroad had been secured by fraud, and that the road is now being wrecked virtually by the defendants. The defense alleged that the subordination of the Carolina Central to the Seaboard system had not injured the former, that the transfer and control were legal, and that there had been no violation of trust. Judges Bond and Seymour took the papers in the case, and reserved their decision. The case will probably go up on appeal to the United States Supreme Court.

Central of Georgia.—This company makes the following statement for the month of May:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$155,700	\$144,164	I. \$11,536	8.0
Expenses.....	140,416	174,798	D. 34,382	19.7
Net earnings.....	\$15,284	\$29,366	D. 14,082	91.9

The net gain over last year thus amounted to \$45,918 for the month.

Central Pennsylvania.—This company has filed articles of incorporation to build a railroad from Mt. Pleasant in Westmoreland County, Pa., to Punxsutawney in Jefferson County, a distance of about 70 miles. It is a Baltimore & Ohio project, and will connect the Pittsburgh Division of that road with the Rochester & Pittsburgh road, besides passing through and opening up a region rich in lumber, coal and iron. It will also give the road a direct connection with the northern oil district. It is said that the preliminary surveys have already been made.

Chicago, Burlington & Quincy.—The following statement is published for May and the five months ending May 31:

	May.	Five months.	
	1883.	1882.	1883.
Earnings.....	\$1,888,077	\$1,565,261	\$9,245,493
Expenses.....	1,149,223	857,494	5,051,535
Net earnings.....	\$738,854	\$707,767	\$4,293,958

For the five months there was an increase of \$1,627,042, or 21.1 per cent., in gross earnings; an increase of \$707,474, or 16.3 per cent., in expenses, and an increase of \$919,568, or 27.3 per cent., in net earnings.

Chicago, St. Paul, Minneapolis & Omaha.—Track is now laid and trains are running on the Bayfield Branch to Vanderverter on the west side of Chequamegon Bay, 51 miles beyond the late terminus at Cable, Wis., and 171 miles from North Wisconsin Junction. An ore dock is under construction at Vanderverter. Work is in progress on the extension from that point to Bayfield, 6 miles. Work is also in progress on the branch from Ashland Junction, 6 miles south of Vanderverter, east to Ashland, 6 miles.

Columbus & Eastern.—Work is now in progress at several points along the line of this road from Columbus, O., to Saltillo, to which point the contracts have been let. The work is not heavy, except for a few miles along the Moxahala near Fultonham, where there is some rock cutting.

Concord.—Plans have been completed for the new passenger station at Concord, N. H. The main buildings will be of brick, 218 by 63 ft., and two stories high. The first story will contain the waiting rooms, baggage room, restaurant, etc., and the second story will be used for the offices of the company. The train-house will be 752 ft. long, with a separate track for each of the roads entering the city.

At the conference last week between representatives of this company, the Northern and the Boston, Concord & Montreal on the one hand, and of the Boston & Maine and the Eastern on the other, it was decided to support the general railroad law which has been introduced in the New Hampshire Legislature. The bill as introduced has provisions authorizing the leasing of existing lines and the consolidation of companies, with the consent of their stockholders. The Legislature is at present busy over a Senatorial contest which is likely to last for some time, and the railroad law is not likely to be taken up soon.

Connotton Valley.—Of this company, now in default on its coupons, the Boston Herald says: "The sentiment of the directors seems to be to wait until the Cleveland Extension is built, next month, before taking any action regarding the deferred coupons. The completion of this extension will be a sort of milestone in the history of the company, and furnish a convenient opportunity for making an inventory of assets and liabilities. A telegram announces everything working well on the extension, and that work is in progress at the only point where delay was feared. All the money required for this work and the equipment purchased early in the year, about \$420,000, has at last been subscribed. The company had to buy more land in Cleveland than was actually needed, in order to secure what was necessary. This extension is expected to be of great benefit."

Denver & Rio Grande.—A report has been circulated that this company is arranging to extend its line east from Denver to Kansas City. The rumor does not appear to have any foundation in fact.

Denver & Rio Grande Western.—The following statement is condensed from this company's application to the New York Stock Exchange for the listing of its securities.

Capital stock in shares of \$100 each. Amount authorized, \$48,000,000. The first-mortgage bonds are issued and to be issued to

the extent of \$16,000 average per mile, under a deed of trust dated Aug. 1, 1881, to Louis H. Meyer, New York, Trustee. Interest at the rate of not exceeding 7 per cent. per annum. The bonds are numbered from 1 upward, and are of the denomination of \$1,000 each, and are not obligatory until authenticated by the trustee, as provided in the trust deed.

An additional or co-trustee under said deed of trust, Mr. Edward Lewis, of the city of Philadelphia, Pa., was appointed Nov. 27, 1882.

Bonds Nos. 1 to 6,300 inclusive are authenticated by Louis H. Meyer, Trustee, and bonds from 6,301 upward have been, and will be, authenticated by both of the trustees herein named, or their successors or the survivor.

There are under construction 469 miles of road, of which there are now completed 366.1 miles, as follows:

From Salt Lake City to the border of the state of Colorado, where connection is made with the Denver & Rio Grande	274.20
From Salt Lake City to Ogden, where connection is made with the Central Pacific	36.45
Branch to Bingham Canyon	16.25
Branch up Little Cottonwood	18.20
Branch to Pleasant Valley Coal Mines	21.00

Total number of miles completed..... 366.10

Grading is mostly completed on the extension from junction, near Green River, westward through the Wasatch mountains to Salina, and also in important passes elsewhere on the company's system of railway.

The trust deed provided for the issue of a sum not to exceed \$10,000,000, in bonds of \$1,000 each, dated Sept. 1, 1881, payable 30 years after date, bearing 6 per cent. interest, payable March 1 and Sept. 1; principal and interest payable in New York in gold coin.

Of the above-mentioned 6 per cent. bonds there have been issued \$6,900,000, on account of mileage completed and under construction.

The Denver & Rio Grande Railway Co. has agreed to lease the now completed road, and so much more as will make in all 469 miles, at a rental of 40 per cent. of the gross earnings, and has guaranteed the Western Co.'s bonds to the extent of \$7,500,000; the bonds so guaranteed being numbered from No. 1 upward.

The earnings on 155 miles of road operated by the company since Aug. 1, 1882, were as follows:

Aug. 1 to Dec. 31, 1882, gross	\$170,918
Aug. 1 to Dec. 31, 1882, net	105,138
Jan. 1 to March 31, 1883, gross, on same mileage as operated in 1882	79,489
The gross earnings for month of April on 235 miles operated were	55,000

The line between Salt Lake City and the Colorado border, where connection is made with the road of the Denver & Rio Grande Railway Co., was completed and opened for business in the early part of the month of April; but the full benefit of the traffic was scarcely realized until the last week of that month, when the earnings reached \$2,850 per day, on 325 miles of operated road, being at the rate of \$3,200 per mile per annum, 40 per cent. whereof amounts to \$1,280 per mile.

Deposit, Oxford & Syracuse.—The preliminary survey of this projected line from Deposit, N. Y., to Syracuse has been completed. The engineers report a very good line, with less heavy work than had been expected.

Franklin & Megantic.—This company has been organized to build a railroad of 2 ft. gauge from Strong, Me., on the Sandy River road, northward through Freeman and Salem to Kingfield, about 18 miles.

Hoosac Tunnel.—The bill to charter this company with authority to buy the Troy & Greenfield road, including the Hoosac Tunnel, from the state, to buy or lease the Fitchburg road, the Boston, Hoosac Tunnel & Western and the Troy & Boston, is still before the Railroad Committee of the Massachusetts Legislature. Arguments from its friends and opponents have been heard at some length and are still in progress.

Illinois Central.—In the United States Circuit Court in Chicago, June 14, Judge Harlan delivered the decision of the Court refusing the application made to remand to the State Court the suit brought by the Attorney-General of Illinois to restrain this company from further extension of its lake front property in Chicago. The Court holds that the decision of the case depends chiefly upon questions arising under the constitution of the United States, and that the case is therefore properly under the jurisdiction of a federal court.

Illinois Midland.—Argument was heard last week before the United States Circuit Court on the question of confirming the Master's report disallowing about \$500,000 of the certificates and other debt of the Receiver, on the ground that the debts had been incurred without proper authority. The Court has not yet given its decision.

Indiana, Alabama & Texas.—The engineers of this company have begun the location of the section from Clarks ville, Tenn., to Princeton, a considerable amount having been subscribed in those towns. As heretofore noted, the projected line is from Evansville, Ind., to Florence, Ala., and thence to Mobile. The company's agents are canvassing for subscriptions in a number of towns along the line.

La Crosse & Onalaska Short Line.—This company has been organized to build a railroad from La Crosse, Wis., north to Onalaska, about 8 miles. It is a local line, intended to serve the lumber mills along Black River, north of La Crosse.

Lehigh Valley.—It is again reported—and again denied—this week that this road is to be leased to the Pennsylvania Railroad Co. The terms have been variously reported, the most general statement including a guarantee of 10 per cent. dividends on the stock.

While it is probable that no lease has been concluded, and perhaps is not likely to be at present, there is no doubt that some arrangements are being made for a closer connection between the companies. The Lehigh Valley and the Pennsylvania have always been friends and allies, but since the lease of the New Jersey Central road to the Reading, it is very probable that the Pennsylvania desires to secure itself against a possible change of ownership in its ally, and to have the road under its own control. The Lehigh Valley has a very valuable property in its road, and has also a long contract for the use of the Erie tracks to Buffalo, which might be of great value to the Pennsylvania hereafter. It is, however, not only its direct value which would make it an advantage to the Pennsylvania to control the road, but also the fact that in the hands of an unfriendly company—the Reading for instance—it might be used to do the Pennsylvania considerable injury.

It is reported that all the stock available is being bought up for account of the Pennsylvania. If enough could be bought, probably there would be no lease, but the road would be simply controlled and operated as the Northern Central and the Philadelphia, Wilmington & Baltimore are. It is, however, impossible to secure a controlling interest without the stock owned by the Packer estate, and it is said that Judge Packer's will by its terms prevents the heirs

from parting with their stock. This would not, however, prevent a lease of the road.

Just what has been done so far is not known. There is little doubt, however, that both the Pennsylvania and the Reading would like to control the road, and that the former is the most likely to get it. The owners of the property know its value, and will not part with it except on terms advantageous to themselves.

Little Rock & Fort Smith.—Argument is in progress this week before the United States Circuit Court at Keokuk, Ia., on the application of the holders of Arkansas State railroad bonds for a receiver for this road. It is a test case, and the decision will apply equally to all the other roads, in aid of which these bonds were issued by the state, which afterwards repudiated them.

Nashville, Chattanooga & St. Louis.—This company makes the following statement for May and the eleven months of the fiscal year from July 1 to May 31:

	1883.	1882.	Eleven months.	1881-82.
Earnings.....	\$171,079	\$154,163	\$2,112,862	\$1,937,878
Expenses.....	95,121	90,674	1,187,962	1,155,808
Net earnings..	\$75,958	\$63,489	\$924,900	\$782,070
Interest and taxes.....			596,811	581,807
Surplus.....			\$328,089	\$200,263

For the eleven months there was an increase of \$174,984, or 9.0 per cent. in gross earnings; an increase of \$32,154, or 2.8 per cent. in expenses; an increase of \$142,830, or 18.3 per cent. in net earnings; and an increase of \$127,826, or 63.8 per cent., in surplus.

New Orleans & Northeastern.—A suit has been begun in New Orleans by A. J. C. Robbins & Co., contractors on this road, to recover \$49,769 claimed to be due on work done, and also damages for the company's failure to comply with the terms of the contract. The property of the company has been attached.

New York City & Northern.—It is said that the terms of the reorganization have been finally agreed on, although the agreement has not yet been signed. The bondholders are to advance money to make improvements on the road, the estimated cost of which is as follows: Yonkers Branch, \$600,000; Lake Mahopac spur, \$75,000; second track from High Bridge to Van Courtlandt, \$100,000; additional equipment, \$100,000; a total of \$875,000. The agreement will be ready in a few days.

New York, Lake Erie & Western.—This company's statement for April and the seven months of the fiscal year from Oct. 1 to April 30 is as follows:

	1883.	1882.	Seven months.	1881-82.
Earnings.....	\$1,548,474	\$1,670,743	\$11,383,165	\$10,963,673
Expenses.....	1,079,503	1,001,725	8,026,528	7,700,841
Net earnings..	\$468,971	\$669,018	\$3,356,637	\$3,262,832

For April the decrease in net earnings was \$200,047, or 29.9 per cent. For the seven months there was an increase of \$419,492, or 3.8 per cent. in gross earnings; an increase of \$925,687, or 4.2 per cent. in expenses, and an increase of \$93,805, or 2.9 per cent., in net earnings.

New York, Ontario & Western.—It is reported that this company will build a branch from its main line near the Shawangunk Tunnel down the Neversink Valley to Port Jervis and thence down the Delaware to the Water Gap, connecting with the Delaware, Lackawanna & Western. This has been reported several times before, but there does not appear to be any sufficient reason for building an expensive branch such as this would be.

New York, West Shore & Buffalo.—This company has concluded an agreement which, it is stated, gives it the use of the New York, Lake Erie & Western branch from Buffalo to Niagara Falls for five years. In return some concessions are made to the Erie in relation to business in the eastern part of New York.

Track has now been laid through the Weehawken Tunnel, and construction trains are using it. Work is progressing on the yard and terminus at Weehawken.

Northern Pacific.—The great trestle in the Coriacañ Defile, near Missoula, Montana, is completed. This trestle is 866 ft. long and 226 ft. high at the highest point.

The Executive Committee has directed the Treasurer and General Auditor of the company to prepare and submit to the board of directors, as early as practicable, a financial statement between the company and its preferred stockholders as the same shall be at the close of the fiscal year ending June 30 instant.

Ontonagon & Brule River.—Surveys have been completed for the extension of this road from its present terminus at Rockland, Mich., to the Wisconsin state line, a distance of 63 miles. It is uncertain whether work will be begun this season.

Philadelphia & Reading.—This company offers for sale \$1,000,000 first mortgage bonds issued on the Shamokin, Sunbury & Lewisburg Branch just completed, and secured by a traffic contract between the Reading and the New York Central. The bonds bear 5 per cent. interest and have 30 years to run. Bids will be received until June 25 by the Treasurer of the Reading Co. in Philadelphia, or the Farmers' Loan & Trust Co. in New York; no bid less than 95 will be considered. The road is 31 miles long, and is said to have cost \$2,200,000 to build with a single track. The stock is \$1,000,000.

A new division, called the Mahanoy & Susquehanna Division, has been founded, which includes the following branches: The Mine Hill & Schuylkill Haven Branch, the Mahanoy & Shamokin Branch, the Catawissa & Williamsport Branch, the Little Schuylkill Branch, the East Mahanoy Branch, the Schuylkill Valley Branch, and the Mount Carbon & Port Carbon Branch.

Pittsburgh, Bradford & Buffalo.—The Big Level & Bradford Co. has been consolidated with this company, the name of the latter remaining unchanged. The company thus taken in has begun to build a road from the Pittsburgh, Bradford & Buffalo through the oil region to Bradford.

Pittsburgh, Cincinnati & St. Louis.—The following circular from Manager James McCrea is dated Columbus, O., June 11:

"The continuation of the Pittsburgh, Wheeling & Kentucky Railroad, known as the Benwood Extension, will be opened for business from Wheeling, W. Va., to Riverside, 3.84 miles, June 18, 1888."

This makes the road (which is leased and worked by the Pittsburgh, Cincinnati & St. Louis Co.) 27.34 miles long, from Wheeling Junction to Riverside. The extension reaches several large mills; its completion was delayed by litigation over the right of way across Baltimore & Ohio property in Wheeling.

Rochester & Pittsburgh.—This company has authorized the issue of \$600,000 new second-mortgage bonds for the purchase of terminal property in Buffalo, and the erection of docks and stations there. It is said that the whole issue has been placed at 92½ in New York.

St. Louis, Creve Coeur & St. Charles.—This is the name under which the purchasers of the West End Narrow-Gauge road have reorganized the company. They purpose extending it from its present terminus at Florissant, near St. Louis, north to Musick's Ferry on the Missouri, with a branch from Florissant by Creve Coeur Lake to the Missouri River, opposite St. Charles.

St. Paul & Northern Pacific.—This is the title of the railroad formerly known as the Western Railroad of Minnesota. It extends from Brainerd, on the line of the Northern Pacific Railroad, to Sauk Rapids, on the line of the St. Paul, Minneapolis & Manitoba, about 60½ miles, has been leased to the Northern Pacific Railroad Company since May 1, 1878, and has constituted, with the use of about 75 miles of the Manitoba road, the line by which the Northern Pacific Railroad reached the cities of Minneapolis & St. Paul. The New York Evening Post says: "An arrangement has been made with the Manitoba road, by which the St. Paul & Northern Pacific Railroad is now constructing a parallel line from Sauk Rapids to Minneapolis, thereby creating a double-track railroad, one-half owned by each company, but both tracks to be used in common. The St. Paul & Northern Pacific Railroad will be extended as a double-track line from Minneapolis to St. Paul. For some time past negotiations have been conducted with secrecy for the purchase of the real estate desired in those cities for the contemplated right of way and terminal facilities."

The Northern Pacific Railroad Company leases all this property, and practically owns it through a deposit of the entire capital stock in trust, thereby perpetually securing to its system the independence and the facilities of this important terminal road, over which will pass the bulk of the business to and from the region served by the Northern Pacific Railroad.

Sandy River.—The towns of Strong and Phillips, Me., have voted to sell their stock in this company to the Maine Central Co. One of the conditions of sale is that the road is to be changed from 2 ft. to standard gauge within a reasonable time.

Schuylkill & Lehigh.—At a special meeting in Reading, Pa., June 19, the stockholders voted to authorize an issue of \$1,000,000 bonds, of which a sufficient amount will be used to redeem the outstanding first-mortgage bonds, the balance for improvements of the road. The company's road is leased to the Philadelphia & Reading.

Southeastern, of Canada.—The Boston Advertiser of June 20 says: "The report, via St. Albans, of a sale of the Southeastern Railway to the Canadian Pacific, was evidently premature, as a private dispatch from Montreal denies the sale on the best authority. Whether the negotiations between the corporations eventuate in a sale or not, however, the Southeastern is sure to be the New England connection of the Canadian Pacific, and as such will be an important and valuable part of a great through line. The Montreal & Sorel Railway, which is a part of the Southeastern system, was inspected by Canadian Pacific officials on Friday last, and by Mr. Burton, of the firm of Boyle, Campbell, Burton & Co., of London, the firm who placed this company's bonds in London on Saturday. It is understood that he is making an investigation into the prospects of the Great Eastern Railway. During the past week he has made a careful examination of the located line between Rouses Point and St. Lambert. He was accompanied by Mr. Armstrong, the Managing Director, and Mr. Shanly, the Engineer, who located the line. This week he proceeds to examine the line between Sorel and Levis. He will probably join Messrs. Shanly and Lassey, the engineers, who left there a week ago to examine this route. It is said the necessary capital can be obtained to build the whole Great Eastern line, provided the government gives the same assistance as to other lines."

"It is said to be a part of the plan to extend the Montreal & Sorel to Point Levis, opposite Quebec, in order to give the Canadian Pacific an independent line to the ancient capital, to compensate for its loss of the North Shore road, lately secured by the Grand Trunk. In this event, probably the projected extension of the Southeastern's Champlain Division from St. Guillaume to Doucet's Landing, on the St. Lawrence, opposite Three Rivers, would be abandoned, as the proposed Montreal & Sorel extension would pass Doucet's Landing and the Champlain Division, which now connects at St. Guillaume with the Northern Division, to Sorel, would thus have nearly as direct a line to Doucet's Landing as by the former plan."

Tennessee Southern.—This road is reported graded from Memphis, Tenn., to Clarksdale, Miss., about 100 miles, and tracklaying has begun near Memphis. It is the northern end of the Mississippi Valley line from Memphis to New Orleans.

Texas Trunk.—The bondholders who bought this road at foreclosure sale have organized a new company. They will at once begin work on the extension of the road from Kaufman, Tex., eastward 15 miles.

Toledo, Cincinnati & St. Louis.—This company has issued a circular requesting holders of income bonds to exchange them for preferred stock of the same par value. The advantage offered is that the preferred stock will have voting powers, which the bonds have not.

Troy & Greenfield.—The Massachusetts Legislature has passed an order appropriating \$79,495 in settlement of the claim of Walter Shanly, survivor of the Shanly Brothers, the contractors who completed the Hoosac Tunnel. The amount is about two-thirds of the claim, which has been before the Legislature for several years.

Ultima Thule, Arkadelphia & Mississippi.—This company has filed articles of incorporation to build a railroad from Ultima Thule, Ark., by Lockesburg, Centre Point, Murfreesboro, Antoine, Hollywood, Arkadelphia, Princeton and Cohasset to Fordyce in Dallas County, on the Texas & St. Louis road. The distance is about 150 miles.

Union Pacific.—Work has been begun on the extension of this company's Omaha & Republican Valley Branch from Lincoln, Neb., south to Beatrice, about 40 miles.

Wabash, St. Louis & Pacific.—It is officially announced that the car trust certificates of this company will be extended three years from date of maturity, in order that their payment may be less onerous upon the companies than it otherwise would be. The statement is also made that the holders of the greater part of these car trust certificates have agreed to take in their places the new collateral trust bonds of the Wabash, guaranteed by the Iron Mountain.

It is reported that a new line is to be built from Indianapolis, Ind., to Vincennes by this company or in its interest, forming a connecting link between its Cairo and Indianapolis divisions. Local subscriptions have been asked for the road, with the assurance that it is a Wabash project.

Zanesville & Southern.—Surveys are being made for this road from Zanesville, O., southward to Fultonham, about 15 miles. It is intended to connect with the Columbus & Eastern road, now under construction.